THE VETERINARY JOURNAL

AND

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AUGUST, 1897.

TUBERCULOSIS.

BY HENRY THOMPSON, ASPATRIA.

HOLDING the opinion that tuberculosis is spread more by hereditary influence than by infection from inhalation or ingestion, may I ask if you will allow me a little space in your journal to record some experience I have had with the malady in my own family, which is one great means of making me advocate its hereditary and latent propensity. How the disease-producing germ is transmitted from parent to offspring I leave others to solve.

My first wife was of a very delicate and fine organisation, having been threatened with consumption when between 17 and 23 years of age and before I met her. Her father died at 40 years of age and her eldest brother at 26 years from phthisis. She had one married sister and two other brothers; the former had three children, one of which died at three years old from *Tabes mesenterica;* a second at seven years from tubercular meningitis; in the eldest girl the malady made its appearance when she was about 17 years. She was well cared for and sent to various places in the south, and although she had several relapses she always seemed to get well again, gaining health and weight each time. About three months after her last return from Matlock, well and hearty, she took liberties with herself and danced too much at a ball, got a chill, and was soon carried off with acute phthisis.

Turning to my own family, four girls and two boys, both the latter died from accidents received, one at 19 years through the fall of his horse, and the other at 26 having been crushed by a bull. The second girl died at five years from tubercular meningitis which followed a very acute attack of scarlet fever. My eldest daughter died at 18 from acute phthisis. She was a fine, strong, and healthy-looking

lassie as anyone need wish to see, until she entered her eighteenth year, when the malady made itself manifest, and carried her off in six months. In my third daughter, Fannie, the disease showed itself first in the apex of the left lung. After a hard fight, good nursing and the inhalation of the fumes of iodoform, change of air and scenery, she appeared to have regained her wonted health, although the apex of the lung was consolidated. When about 22 years of age her right knee gave anxious trouble, but as a result of great care, change of air in the south and midlands, and various consultations with medical specialists, amongst whom were Dr. Balfour and Dr. P. Heron Watson, of Edinburgh, the knee got apparently better, though still weak.

In March, 1895, unknown to me, she changed some warm underclothing for some of a lighter texture, and went with a driving party to Keswick, got cold, and the disease reappeared. In October she broke down entirely, and in January, 1896, died of general tuberculosis. She was a great lover of animals; a favourite dog, who was a faithful companion and stayed with her constantly in her bedroom, used to be fed from her hand with the dainty bits she herself could not eat. The poor old dog is still to the fore, fresh and well.

When the weather was favourable she took plenty of outdoor exercise, riding and driving being her particular hobbies. I may add that she would *neither eat flesh-meat, nor drink milk*, her food being chiefly fish, puddings, and fruit.

All my children were brought up on milk from an Irish shorthorn cow of my own, which I had for nine years; one of the best milk and butter producers I ever saw, and when slaughtered as fat, she was a prime carcase of sound healthy beef.

With reference to the two cousins, my niece and daughter, did they recover when we thought them better at the various times, or was the progress of the disease only arrested and lying latent for the time being—only waiting a favourable opportunity to re-appear—or were they re-infected from some outside source? My own opinion is that the disease was still there, though lying latent. My wife died from disease of the cribriform plates, and I have no doubt in my own mind, from what she suffered two years previous to her death, that it was of a tubercular nature. One of her brothers went to Australia, and was reported to have died from bronchitis. The other lived till between 70 and 80, and died from apoplexy, brought on by a diseased bone in the ear.

These cases of my own family connections are only like a great number of other families I have been associated with for the last 40 years.

I have also observed the disease to a large extent follow certain strains of blood in bovine animals. I ask those who favour the infectious and contagious theory of the disease, how they account for the malady following certain breeds of animals and certain families of the human subject? I suppose the answer will be—Hereditary predisposition, or a tubercular diathesis.

From a crush I got in the bottom of a coal-pit by a horse about 25 years ago, and a subsequent fall in the hunting-field, my right lung was so damaged that for eight years I had hæmorrhage from the lung, on one occasion to such an extent that I was unconscious for several hours. My chest has been examined by various medical men, and not one of them can detect the lesion, but I can myself when lying on my back or when suffering from a slight cold, distinctly locate the part of the lung at fault. With this lung I have sat, helped to nurse, and nodded and slept in the rooms of my children dying from consumption, yet up to the present time I have felt no ill effects.

As a great deal has been said and written about milk being a great cause of the disease, I may be pardoned if I extend my remarks on that subject. Milk, either from diseased or healthy animals, can be looked upon as a great carrier of the germs of disease when exposed to contamination; seeing that milk kept for 24 hours at 95° F. has been reported to contain into the teens of billions of various kinds of germs, it is to be hoped that these active little bodies have the power to destroy the injurious action of any tubercular bacilli that the milk may unfortunately contain.

According to statistics returned by the R.A.S.E. from June 4th, 1895-96, as to the number of horses, cattle, sheep, and pigs in the United Kingdom, we find that the number of cows and heifers in calf or milk is 2,511,675. Now, allowing for strippers and in-calf cows, a fair average of milk for each cow might be safely put at 6 quarts per day for 40 weeks in the year, or, say, 6 quarts each day for 280 days: thus 2,511,675 cows at 6 quarts each would return about 15,000,000 quarts of milk, averaging about 1 pint of milk per day for each individual in Great Britain. The number of deaths from phthisis is estimated at 1·63 per thousand each year. London contains about 6,000,000 people, who are reported to consume 2,000,000 quarts of milk per week, or a wineglassful for

each individual a day. Not much chance of infection from this source, more particularly when we note the following by Dr. Sims Woodhead given in evidence before the Royal Commission on Tuberculosis in answer to question 248, "*But what I say is, that if a predisposition to tuberculosis were not there a large number of children who partake of tuberculous milk would be spared the infection.*" A very remarkable answer, though he evidently believes more in predisposition than infection.

In England and Wales in 1894, out of 22,755 deaths from phthisis at all ages amongst males, 18,400 died between the ages of 15 and 55, and 19 per cent. under 15 or over 55, showing that the middle age was the most liable, viz., 81 per cent. If the disease is so much due to milk as is said, why have we not more deaths under 15 years when the children get most milk?

My opinion is that there is too much assumption, too much second-hand and hearsay evidence, too much repetition.

In the translation from Dr. Nocard, I note that Dr. Crosse, of Geneva, is reported to have lost a grown-up daughter through drinking milk *from four cows* that had re-acted to the tuberculin test, two of them having diseased udders. It is very strange that no other case is recorded except that of this unfortunate young lady, seeing that some other persons would partake of the milk, as she could not possibly consume the milk of four cows. Another case from Nocard is very remarkable, where seven cows are reported to have contracted tuberculosis through being waited upon by a consumptive attendant. There is no evidence where the cattle came from. They may have been diseased before entering the byre. It is strange that when any young person exhibits symptoms of the malady, great endeavour is made to get him or her on to a farm where they can get the new milk fresh and warm from the cow. I know of many such cases, but cannot recall any infection to cows.

The following case is very illustrative. A friend of mine living in West Cumberland, met me in the train one day, when tuberculosis was our conversation. He looked steadily at me for a few moments and then said: "Would you believe I come of a consumptive family? My father died at 50 from consumption; I have lost a brother and sister from the same cause, and at the present time another brother is in the balance. When I was between 16 and 22 I was very ill—in fact looked upon as booked. However, I went night and morning with my glass to the byre, when the cows were being milked, and had it filled with warm milk direct from the cows. I drank this

and you see me now a healthy robust fellow." So much for hot milk. He further said, "More die from the want of good milk than from drinking it." I asked if the cattle were tuberculous? Answer:—"No, not that I know of; they were grand milking animals."

I have known four well marked cases where the disease made itself manifest subsequent to a blow, but all were of a tuberculous strain.

In one strong, handsome fellow, who was fond of shooting, the disease made itself apparent by the bumping of his gun against his chest whilst shooting in competition for the Lord Lieutenant's Cup, which he won. Another case arose from a blow in the chest with a horse's hock; whilst a third and fourth followed blows while playing football. Hæmorrhage from the lungs was the first indication.

Now I think that before milk can be put down as one great cause of the disease, the medical officer and veterinary surgeon must go hand in hand; the first to diagnose the case in his patient, and then, with the aid of the veterinary surgeon, to trace the cause to the cow. Has this been done, or has the medical officer only assumed that the milk is the cause, and not traced the source directly to the cow? The assistance of the veterinary surgeon, whose profession it is to diagnose the disease in the domestic animals, should be called in; and before so much blame is attached to milk, let the medical and veterinary professions work in harmony, so that the true source of the scourge may be ascertained. If tuberculin is to be one of the reliable agents for testing suspected animals, let it be made and tried under Government supervision before being placed in the hands of veterinary officers.

With reference to meat, I have on many occasions said that I have known hundreds of carcases killed and consumed as human food, yet never knew of one bad result.

If the disease is so infectious and dangerous to both the human and bovine species, it is very strange that it has not been scheduled under the Contagious Diseases (Animals) Act, more particularly as Professor Brown has been the head of the Veterinary Department under the Board of Agriculture, and principal veterinary adviser to the Government, as by his means the other contagious and infectious diseases have been scheduled. Why, then, I ask, has Professor Brown not had so dangerous a disease as tuberculosis scheduled before now? He evidently is a non-believer in its infectious and contagious character.

Army Veterinary Department.

Veterinary-Colonel F. Duck, C.B., arrived from India, and has taken over duties of Director-General of the Department.

Veterinary-Major G. D. Whitfield arrived from South Africa, and has been posted to Newcastle-on-Tyne for duty.

Veterinary-Major W. Gladstone left Dundalk for Aldershot with 1st Dragoons.

Veterinary-Captain C. E. Nuthall arrived at Leeds with 2nd Dragoon Guards.

Veterinary-Captain J. G. O'Donel arrived at Newbridge with 14th Hussars.

Veterinary-Captain E. Day left Ballincollig for Aldershot with 12th Lancers.

Veterinary-Captain J. T. Dibben left York for Ballincollig with 17th Lancers.

Veterinary-Lieutenant A. C. Newsom left Edinburgh for Dundalk with 6th Dragoons.

Veterinary-Lieutenant J. Loughlin left Newbridge for Aldershot with 10th Hussars.

Veterinary-Lieutenant J. Moore left Woolwich with 3rd Dragoon Guards for Hounslow Camp, 28th ultimo.

Extract from *London Gazette*, July 6th, 1897.—Army Veterinary Department.—Veterinary-Colonel J. D. Lambert, F.R.C.V.S., C.B., is placed on Retired Pay, dated 28th June, 1897; Veterinary-Lieutenant-Colonel F. Duck, F.R.C.V.S., C.B., to be Director-General, with the rank of Veterinary-Colonel, vice Veterinary-Colonel J. D. Lambert, F.R.C.V.S., C.B., dated 28th June, 1897; Veterinary-Major B. L. Glover, F.R.C.V.S., to be Veterinary-Lieutenant-Colonel vice Veterinary-Colonel F. Duck, F.R.C.V.S., C.B., dated 28th June, 1897; W. A. Wood, gent., to be Veterinary-Lieutenant, in succession to Veterinary-Major B. L. Glover, F.R.C.V.S., dated 7th July, 1897.

Editorial.

SHOEING FORGES.

I HAD intended to wait until further correspondence on this subject should reach me, and both sides should be heard, but, perhaps, it will be better to discuss the matter at once; in the first place because it has been pretty extensively talked about in the profession, and written about in professional

journals; and, secondly, because I am, as is well known, one of the "accused," and am now speaking in self-defence.

The initial error in this controversy is that shoeing and bribing are taken to be synonymous, or, at least, inseparable and indivisible, and so this controversy begins, like so many embittered controversies, in confusion of terms. The important part of all disputes is to begin by defining clearly the point to be discussed, and taking care that each side uses the same words with the same meanings. If this were more commonly done there would be less wrangling and less friction in the world, and many sanguinary and envenomed contests, theological and otherwise, would never have been heard of. The first question, then, is, Must a veterinary surgeon, who keeps a forge, of necessity give bribes? I answer, By no means. Many of my clients send their horses to me just as much in order to avoid contact with this degrading system as to secure attention to their horses. They have thought that the character and reputation which a veterinary surgeon has to maintain, would be a sufficient protection from the seductive influences exercised over their servants by the reckless tradesmen who give bribes, and I trust their confidence has not been misplaced. It was very much to meet this demand on the part of my clients that I, for my part, undertook to keep a forge, and also, of course, to retain them as clients for more purely veterinary work; the profits of a forge as a mere forge are a poor compensation for the work and anxiety involved. And here I may interject the remark that if some of my professional brethren who keep forges in London and elsewhere condescend to the system of backsheesh, they may be to blame, but they are not necessarily to be condemned at once and without a hearing. Which of the members of the Royal College of Veterinary Surgeons, nay, what man in the country involved in the storm and stress of life can honestly say that he has never given this dreadful backsheesh? Has he never tipped a railway guard in order to secure privileges expressly forbidden by railway companies' rules? Has he never given a shilling to a policeman or a doorkeeper to obtain admission to a place in which he has no right to be? Is it not true that orders for the supply of aristocratic, possibly even royal, households with this, that, and the next thing are obtained by all kinds of, let us say, roundabout means; that newspaper puffs can be purchased in quarters that ought to be above suspicion; that veiled advertisements of articles of doubtful value and purchased praises of society or stage-celebrities are to be

found everywhere? No doubt this is very wicked, and veterinary surgeons ought to be far above it, but then veterinary surgeons are only human after all. If a system that is corrupt is to be purified, the purification must begin at the source; the strong and the wealthy must set the example of mending their ways, and the others will follow suit or can be made to follow suit. Let us strive to make merit the touchstone of success, and not what is euphemistically termed "influence": for that is usually the same thing as the Oriental backsheesh in a more or less skilfully disguised form.

I now come to the more important and more strictly professional aspect of this question. Who ought the people to be who keep forges? If we remember that half the troubles that afflict our horses are connected with their feet and legs, if we consider that the bulk of our horses have to perform daily long journeys over stony streets, and if we consider, further, that the majority of these have to drag heavy loads, often up-hill, we cannot avoid the conclusion that shoeing ought to be entrusted only to skilled men, and should be supervised by men who have had a scientific training and understand the anatomy and physiology of the horse. Great attention is paid to this department of veterinary training in the great continental schools. I remember being very much struck, on reading the prospectus of a Dutch veterinary college some time ago, by the emphasis laid on this part of the student's training. A remark that I once heard made by a distinguished officer in the British Army may not here be out of place. In the course of a speech he said: "All we general officers have our fads: my fad is feet—I look after my men's feet and see that they are well and comfortably shod; a soldier that limps is no soldier." Far, therefore, from regretting the spread of the practice of keeping forges amongst veterinary surgeons, I rejoice at it; I think that it is a step in the right direction, and I hope that the day is not far distant when all shoeing will be done at forges kept by veterinary men. It may be urged by my opponents that if my views are correct, then the shoeing ought to be done by the hands of the surgeon himself, and that, if not, shoeing is nothing more nor less than a trade carried on for mere gain. But this is quite fallacious. It is true that every veterinary student ought to be instructed in the best modes of shoeing horses, but it does not follow that he is to go on making shoes and shoeing horses for ever. A young lady goes into the kitchen in her father's house and

learns all the mysteries of cooking, but it does not follow that she is going to devote her whole life to the culinary art, or even to undertake the whole or any part of the cooking in her father's or her future husband's house. She goes through the toilsome initiation in order that she may direct others, whilst devoting herself to higher and more difficult duties—always prepared, be it remembered, to take the place, at a moment's notice, of a refractory or incompetent cook. This is the ideal housewife. Now let us have the ideal veterinary surgeon. He must not only know his anatomy and physiology well—his teachers and examiners will look after that—but he will know what is the best kind of shoe for every horse, he will know the most suitable material for that shoe, and he will know how to direct his subordinates in the fastening of the shoe to the foot. But he will seldom or never touch hammer or tongs himself—his hands are far too important for such work, and nothing must be done that will impair the delicacy of his touch. A veterinary surgeon's fingers ought to be so sensitive as to make him almost independent of his eyes.

I would sum up my case thus: The care of shoeing our horses ought to be entrusted to trained veterinary practitioners—that, it seems to me, is self-evident. If it were so arranged by law or custom there would be no competition between skilled and unskilled men, to the distinct advantage of the latter, who have less ballast to carry; the business would be entirely in the hands of our profession, and we could deal out punishment to men who, by unworthy conduct like the giving of bribes, disgraced their profession, and caused anxiety or suspicion in the minds of their clients.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

A MEETING of Council was held on Friday, July 2nd, at the College, the President, Mr. R. C. Trigger, occupying the chair. There were present: Messrs. Abson, Barrett, Bower, Carter, Cope, Dewar, Dollar, Edgar, Fraser, Hartley, Samson, Locke, Mason, McFadyean, Mulvey, Penberthy, Shave, Simpson, Trigger, Villar, Wartnaby, W. O. Williams, Wragg; Gen. Sir Frederick Fitz-Wygram, Mr. Thatcher (solicitor), and Mr. Hill (secretary).

The SECRETARY read letters regretting inability to attend the meeting from Professor McCall and Mr. Elphick.

The PRESIDENT: The next business before us is the election of president and vice-presidents.

Mr. WRAGG: I have much pleasure in nominating Professor Penberthy as President of the College for the ensuing year. I have no occasion to make any remark. We all know Professor Penberthy, who has been on the Council for some time, and we all know the good work he has done. I venture to think Professor Penberthy will make a very good president for the R.C.V.S.

Mr. MULVEY seconded the proposition, which was supported by Professor W. O. Williams and carried with acclamation,

The EX-PRESIDENT: Professor Penberthy, I have great pleasure in informing you of your unanimous election as President of this College for the ensuing year.

The presidential chair was then taken by Professor Penberthy.

The PRESIDENT: I am far too sensible of the magnitude of the honour which you have conferred upon me to-day to attempt to express my feelings in words. I cannot do more than thank you for having conferred upon me the greatest honour which is at your disposal. I can only hope that my endeavours, which shall be the weightiest I can use, will be successful in securing that confidence which you have now reposed in me. I will do all that within me lies to be simply what a chairman should be, and to uphold the honourable traditions of the chair of a great profession, which has a noble work to do, and which I am proud to say is advancing so rapidly. I will do all I possibly can not to prevent the progress we are now aiming at. But it is with no consciousness of my own powers to fulfil the position I now occupy that I accept your great kindness and confidence to-day; it is in the assurance that I shall receive that support which a comparatively long occupation of a seat on the Council has told me that your chairman has always received. My principal endeavour shall be to retain that confidence, and when I leave the chair, to leave it in a position not deteriorated by my occupation of it. I thank you very sincerely, gentlemen, for the honour you have done me, and I ask you again for that support which it is absolutely necessary an occupant in my position should receive in order that the business may be got through to the best interests of the profession and the College.

I believe it is the first privilege of a president to propose a vote of thanks to his predecessor. This affords me very great pleasure. Mr. Trigger, our respected ex-president, was elected to the Council on the same day as myself. We have worked in harmony while on the Council, and I have had plenty of opportunity of judging the business capacity he possesses and which he has exemplified in the occupation of this chair. A review of the year's work will tell us how well we have got on, how well the unanimity of the Council has been preserved, and will give us evidence of that advance which we desired so much under his protection. It does not require me to use any words in proposing that the heartiest thanks of this Council be tendered to Mr. Trigger for the excellent manner in which he has carried out the duties of the president of the R.C.V.S., and I now beg to make that proposition.

Mr F. W. WRAGG: I have very great pleasure in seconding the proposition that has emanated from the President. I can endorse every word he said. Mr. Trigger has filled this chair with honour to himself and with great advantage, I think, to our College. We all remember Mr. Trigger coming to one of the Council meetings, and we all felt quite sure he ought not to have been present because he was so very unwell. He was just recovering from influenza, and he ought to have been in bed, but with that bulldog pluck which pertains to our friend he came here and would persist in going through his duties.

The motion was carried by acclamation.

The PRESIDENT: I have very great pleasure in presenting you, Mr. Trigger,

with the thanks of the Council for the work you have done. You have been fortunate enough to hear the manner in which the vote of thanks has been expressed, particularly by my friend, Mr. Wragg, and I am sure you will always carry into your private, public, and professional life the very hearty wishes of this Council, and also be aware that you have their gratitude.

Mr. TRIGGER, in returning thanks, said: I feel, perhaps, quite as much overwhelmed with your kindness to-day as I did twelve months ago when you did me the honour of electing me to the presidential chair. It must be and it is extremely gratifying to me to know that my humble efforts have met with your approval, and that you have so kindly and unanimously awarded me this vote of thanks. For myself, I can say that my year of office has been an exceptionally pleasant one. I think I was on terms of friendship, I may say, before that with every member of the Council. I believe that was so, and I can assure every member of the Council that those bonds of friendship are firmly cemented by the kind courtesy I have received at your hands during the past year. When I took office the horizon was not free from clouds. The one question, I think, upon which we can congratulate ourselves very heartily (as having passed through a stormy period and sailed into smooth waters) the most difficult question that then loomed before us and which it appeared might possibly create a rift between the teaching college and the Council, was the question of the three examinations a year. When men all have one aim and object in view, and meet together and discuss a matter with a determination to bring the thing to a friendly issue, there is very seldom much difficulty, and the fact that the Council met the Royal Veterinary College, and that the matter was amicably arranged, and that the examinations are now quite in accordance, not only with the views of this Council, but with the wishes of the Camden Town and Scotch schools, and, I believe, are supported by the profession generally, is, I think, a very happy termination of what at one time threatened to be a very troublesome matter. Then, gentlemen, we have had another matter during the past year before us which has shown the truth of the old adage, "Unity is Strength." The Scotch Bill has shown that the profession is a united profession when its interests are threatened; they have pulled together and worked together loyally. Not one discordant note has been struck over the Scotch Bill, and I am quite satisfied that there will not be. I must thank you all for your kind assistance, and call special attention to the very great assistance which I received from the senior vice-president, the ex-president of the College, Mr. Simpson. For many months he has been entirely at my service. Unfortunately, my health broke down, but in any matters pertaining to this Bill Mr. Simpson entirely relieved me, and also of any matters relating to the conduct of the examinations. He has been a very loyal and true friend to me, and he has given to the veterinary profession, in a most ungrudging spirit, many services which really and truly he might very well have shirked or not considered as being part of his duty at all. I am deeply indebted to everyone, but I thank Mr. Simpson very greatly for the kind assistance he has shown me. I can assure you that I am very profoundly touched by the confidence you have shown me.

Election of Vice-Presidents.

Mr. TRIGGER: In regard to this matter I should like to say that I think the election of vice-presidents has got into a very mistaken groove, and I cannot say I endorse or accept in any way the suggestions made by Mr. Faulkner, whose absence from this Council I regret, as correct. If the vice-presidency is anything at all, it is a post to be conferred upon gentlemen who have rendered willing service to the Council, something of the same nature as the aldermanic bench of the town council. But the argument introduced last year seems to be an extraordinary one, viz., that it should be chucked about

to every young man who comes on the Council, that it should be handed round in turn. If that is correct, a gentleman has only to come here and sit four years, getting elected in each of the four years, and as everybody who is a vice-president is a member of Council, by that means the dignity of the office is done away with altogether. I suggest that it is for gentlemen like Mr. Wragg, Mr. Simpson, Mr. Mulvey, who have done yeoman service, and Professor McFadyean, who is one of our seniors who has not passed the chair, and Mr. Mason, who is another senior who has not passed the chair, and I suggest it should be a reward for services rendered. Therefore I shall propose that Mr. Wragg, Mr. Simpson, Mr. Mulvey, Mr. Mason, and Professor McFadyean be elected as vice-presidents.

The following gentlemen were also nominated: Messrs. Trigger, FitzWygram, Dewar, Lambert, Lawson, Fraser, Barrett, and Elphick.

The following was the result of the ballot :—

Simpson	.. .. ..	17	
Trigger	.. .. ..	16	
Wragg ..	.. .. ..	12	
FitzWygram	.. .. ..	12	
McFadyean	.. .. ..	11	
Mason ..	.. .. ..	11	
Mulvey	.. .. ..	10	
Dewar	.. ..	7	
Lambert	.. .. ..	6	
Lawson ..	.. .. ..	6	
Fraser	.. ..	5	
Barrett	.. ..	5	
Elphick	.. ..	4	

The PRESIDENT: I have to declare the following gentlemen elected as vice-presidents: Messrs. Simpson, Trigger, Wragg, FitzWygram, McFadyean, and Mason.

Mr. LOCKE: I hope that next time the claims of men who have to travel a great distance and spend a great deal of money in getting to London will be considered. Four or five of the gentlemen elected are Londoners.

Election of Treasurer.

The PRESIDENT: You all know who had this office last year, and it is not for me to say how well he has filled it.

Mr. LOCKE: I have great pleasure in proposing that our friend Mr. Wragg be asked to accept the office of Treasurer again. I am sure no man could look after the finance better than he does, and I am confident he will take the same interest in the matter as before.

Mr. BOWER seconded the motion, which was carried unanimously.

The PRESIDENT: I have great pleasure in informing you, Mr. Wragg, that the Council have conferred upon you the great honour—never mind about the responsibility—of the office of Treasurer. We all feel quite sure that you will keep your hand as tight as you have done, providing your strength does not break down.

Mr. WRAGG: I thank you very much, gentlemen. I shall try and do a little better this year, than I have done hitherto, because I want the College to make a little more profit. There really must be something done to accomplish that, and the only way I can see is by cutting down some of the expenses. I hope to-day before we leave something will be said about it.

The PRESIDENT: I am sure we shall pay very grave consideration and attention to the words which have fallen from the Treasurer.

Election of Secretary and Registrar.

On the motion of Mr. TRIGGER, seconded by Professor W. O. WILLIAMS, Mr. Hill was re-elected Secretary and Registrar.

QUARTERLY MEETING.

The quarterly meeting of the Council was then held, Professor Penberthy, as president, occupying the chair.

Minutes.

Mr. LOCKE moved that the minutes should be taken as read.

Mr. SIMPSON seconded.

Mr. DOLLAR pointed out that according to the bye-laws unless the minutes had been printed and a printed copy placed in the hands of each person constituting the Council they could not be taken as read. He contended that the minutes must be read and the Council must be prepared to bear the infliction.

Mr. SIMPSON submitted that although the Council did not put the profession to the expense of printing and circulating amongst the members of Council the minutes of every meeting, those minutes were circulated sufficiently to fulfil every purpose for which the bye-law was passed by being published in the veterinary periodicals. He considered that the Council would be in order in taking the minutes as read.

Mr. DOLLAR asked that the solicitor might state what was the legal aspect of the question.

The PRESIDENT ruled that the Council must take the full responsibility in deciding, and asked the secretary to read the minutes.

The SECRETARY read the minutes, during which several members rose from their seats, and left the Council Chamber.

On the motion of Mr. TRIGGER, seconded by Mr. MULVEY, the minutes were confirmed.

Address to the Queen.

The PRESIDENT informed the Council that the address to the Queen had been presented at the Home Office and graciously received. It had not been officially acknowledged yet.

Letters were also received from the various gentlemen elected as hon. associates thanking the Council for the honour.

A letter was read from the Hon. Sec. of the Ladies' Kennel Association asking the co-operation of the Council in the efforts of the Association to repeal the Muzzling Order; and on the motion of Mr. Mulvey, seconded by Mr. Trigger, it was ordered to lie on the table.

Presentations to the Library.

The SECRETARY announced the following presentations to the library: "L'Aspergillus Fumigatus chez les Animaux Domestiques," by Professor Adrien Lucet; and "Stable Management," by Vet.-Captain J. Nunn.

On Mr. Trigger pointing out that the gift of M. Lucet's book was conditional on the donor being made a corresponding member of the College, it was resolved to write to M. Lucet informing him that no books could be received conditionally. A vote of thanks was passed to Vet.-Captain Nunn for his presentation.

Report of Finance Committee.

The SECRETARY read the report of the Finance Committee.

Mr. TRIGGER: I beg to move the adoption of the report, and that the president and treasurer be authorised to draw cheques to meet the examination expenses, and for petty cash.

Mr. WRAGG seconded the motion, which was agreed to.

Mr. TRIGGER: I now beg to propose that the small committee, suggested in the report, consist of the President, Mr. Wragg, Mr. Mulvey, Mr. Simpson, Mr. Lawson, and Mr. Villar.

Professor DEWAR seconded the motion.

The PRESIDENT: This, gentlemen, I may explain, is a committee which was suggested by the Finance Committee in order to inquire into and define the duties of the Secretary, particularly with regard to finance, I presume.

Mr. DOLLAR: I think the intention was to have a small committee, and I therefore move as an amendment that the committee do not exceed three.

Mr. FRASER seconded the amendment, which, on being put, was negatived, and the original motion was carried.

Registration Committee.

Mr. SIMPSON (chairman of the committee) read the report, which stated that the committee had considered the application of Mr. J. J. Sperring for the restoration of his name to the Register, which had been removed in consequence of non-compliance with sec. 5, sub-sec. 4, and Mr. Sperring having tendered the necessary evidence, the committee recommended that his name should be restored on payment of the usual fee. The committee also reported that a large number of cases of advertising, etc., had been investigated, and cautionary notices had been directed to be sent in certain cases, and in other cases further inquiries to be made.

The report was adopted

Examination Committee.

Mr. MULVEY (chairman) read the report, which stated that the solicitor had reported that the Standing Counsel of the College was of opinion that Miss Custance should not be admitted to her first professional examination without the decision of a court of law. The committee also reported that they had examined the educational certificates, and accepted them all as satisfactory.

Mr. MULVEY moved the adoption of the report.

Mr. MASON seconded the motion.

Mr. TRIGGER: I wish to call your attention to an instruction to the examiners in class D, which I think this Council will say is anomalous; in fact, it is absurd. The resolution was "that the full number of marks obtainable in each subject is 100, namely, 50 for the written part, and 50 for the oral part." That is in class D. Mark the effect of that if it is carried out. If a man gets 50 for his written paper, and 45 is sufficient for a pass, no matter how execrably bad he is, when he goes for the practical part of the examination he is passed, and only requires 15 marks to get second-class honours, or 25 marks in his oral to get first-class honours. This point arose through my meeting one of the examiners in the train, and his pointing out to me this state of affairs. Therefore, I think, before the July examination at Camden Town further instructions should be given to the examiners. Otherwise if a man on his written paper gets 50 he is passed, no matter if he is utterly bad when he comes to the practical part of his examination. Do you oppose that, Professor McFadyean?

Professor MCFADYEAN: I oppose that, and entirely dissent from the views which Mr. Trigger has expressed. It does not affect the final examinations exclusively; it applies to all the examinations. It is very easy to make out a

case; it is very easy to cause it to appear that this is likely to allow incompetent students to pass. Mr. Trigger asks us to believe that a man could take 50 per cent.—that is 100 per cent.—in his written examination and yet believe that that man is incompetent and can answer nothing in the oral. This has been discussed here frequently, and I very well remember that Mr. Hunting, then a member of the Council, showed the absurdity of it by the following illustration. He said that the Great Northern Railway Company can easily prove that King's Cross Station is absolutely incapable of accommodating the traffic, because supposing all the people of London wanted to take a morning train there it would not hold them. I say it is highly improbable that there will ever be a student who can take 100 per cent. in his written and be able to take nothing in his oral. I say that it is for the Council to deliberate upon these matters and not the examiners. The Council discussed this matter at a considerable length before, and there is no reason to suppose that it has changed its mind. It applies to botany, geology, anatomy, chemistry, and everything else; if the student can take 100 per cent. in his written paper he is bound to pass. Has anybody ever taken it? Can anybody point to a case in which a student has taken 100 per cent. in his written and nothing in his oral? It is time enough when anybody can point to an abuse resulting from the administration of the present rule.

Mr. TRIGGER: We should prevent it.

Professor MCFADYEAN: Then, again, I must protest against the suggestion that the system of examination under which the Edinburgh students have been examined this year should be altered. Let Mr. Trigger if he thinks the present rule is bad give notice of an alteration.

Mr. TRIGGER: Very well. I will not do it now in view of the fact that the examinations have to be conducted on these lines, but I think the fact of calling the attention of the Council to the matter is quite sufficient.

The PRESIDENT: I hope, Mr. Trigger, you will take cognizance of it, and in the meantime we must act as we have done before.

Mr. TRIGGER: It is giving very large discretion to the examiners—that is my opinion.

The PRESIDENT: You are bound to do that, I think.

Professor EDGAR: Before the motion is put, may I ask if at the recent examinations held in Scotland there were students sent up from all the veterinary schools in Great Britain.

The SECRETARY: Yes.

The motion for the adoption of the report was then put and carried.

Fellowship Examinations.

The SECRETARY read the report of Mr. Trigger, Chairman of the Fellowship Examination, from which it appeared that nine candidates entered for the Fellowship Examination and that eight successfully passed and duly received the diplomas of Fellowship. The following are the names of the eight successful gentlemen: Professor Hobday, Messrs. W. Robb, Junr., H. Sessions, A. Smith, T. Slipper, W. J. Moran, J. B. Tutt, and D. Pugh.

On the motion of Mr. TRIGGER, seconded by Mr. LAWSON, the report was adopted.

Court of Examiners.

The SECRETARY read the reports of the Board of Examiners for Scotland, which gave the following figures:—For the A examination 52 students were examined; in Edinburgh 27 passed and 15 were rejected, and in Glasgow 4 passed and 5 were rejected. Two first-class and one second-class honours

were gained in Edinburgh. For the B examination, 15 three-years' students presented themselves in Edinburgh, of whom only 4 passed; 42 four-years' students were examined and 34 passed, 9 with first-class honours and 8 with second-class honours. In Glasgow 5 three-years' students were examined and 1 passed; and 8 four-years' students of whom 5 passed, one with second-class honours. In class C, three-years' course, 40 candidates presented themselves in Edinburgh, of whom 22 passed and 18 were rejected. In Glasgow 9 presented themselves, of whom 5 passed and 4 were rejected. In the class C, four-years' course, at Edinburgh 22 candidates were examined, 15 passed and 7 were rejected. At Glasgow 12 students came up, of whom 7 passed and 5 were rejected.

The examiners in morbid anatony and pathology, Dr. Sims Woodhead, and Dr. Sheridan Delépine, wrote that they considered the fifteen minutes allotted to the practical and oral examination was too short a time for the student to do himself justice, as they thought he should have at least ten minutes at the microscope. If it were desired that the examination should be completed in fifteen minutes the student might be allowed to write short descriptions of the specimens submitted to him, so that the greater part of the time might be devoted to oral examination. They were also of opinion that a student who presented himself should have had a definite course of *post-mortem* work. Mr. Harry Olver, the chairman of the class C practical, in his report said that it was unfortunate no provision was made in the four-years' course for an examination in dispensing and prescription writing. When that was first introduced at the C Practical Board many of the students were found to be perfectly incapable of doing either one or the other; but now both were generally efficiently performed and it seemed a pity that so necessary a portion of veterinary knowledge should be allowed to lapse.

Mr. MULVEY moved that the report of the examiners be referred to the examination committee for consideration and report.

Mr. LOCKE seconded the motion.

Professor W. O. WILLIAMS: I should like, before this motion is put to the vote, to ask if the Council has made up its mind that it is not going to permit Miss Custance to be examined by its Board of Examiners, and if the solicitor has any report to make, because I think this a question which must come before us before we approve of this report.

The PRESIDENT: This, perhaps, hardly arises out of the report of the last examinations, but the solicitor informs me that if it is your wish it is entirely for the meeting as to whether Miss Custance is to be allowed up or not.

Mr. TRIGGER: I take it, sir, with great respect to the Council, that we have already decided the question, and that there is no resolution before this Council to rescind that resolution, and therefore the matter is decided, as Professor Williams is well aware.

Professor W. O. WILLIAMS: With all due deference to Mr. Trigger, you probably know that a summons has been served on the Council, and the Council now stands in the position that they have to defend the case. I wish to know, as a member of the Council, not as one of the pursuers, whether the Council is going to defend the case or whether it is not.

The PRESIDENT: I quite understand that that does not arise out of this report, and I must rule it out of order, I am sorry to say.

The motion was then put and carried.

Committees.

The following committees were appointed:—

Registration Committee.—Messrs. Abson, Beddard, Bower, Dollar, Trigger, Carter, Fraser, Elphick, Lawson, Mason, Mulvey, Simpson, Wartnaby, and Wragg; Professors Edgar, Penberthy, and Pritchard.

Examination Committee.—Messrs. Barrett, Beddard, Hartley, Kidd, Locke, Faulkner, Mason, Mulvey, Simpson, Villar, Wragg, and Cope; Professors Dewar, McFadyean, Penberthy, Pritchard, Shave, McCall, and W. O. Williams; Captain Butler and Colonel J. D. Lambert.

Parliamentary and General Purposes Committee.—Messrs. Barrett, Beddard, Bower, Cope, Dollar, Fraser, Hartley, Mulvey, Trigger, Simpson, Villar, Wartnaby, and Wragg; Professors Edgar, McFadyean, Penberthy, and Shave.

Finance Committee.—Messrs. Abson, Barrett, Dollar, Fraser, Lawson, Locke, Mason, Mulvey, Simpson, Trigger, Wartnaby, Wragg, and Villar; Professors Penberthy and Shave.

Library and Museum Committee.—Messrs. Barrett, Bower, Cope, Dollar, Fraser, Mason, Mulvey, and Wragg; Professors Edgar, McFadyean, and Shave.

Publication Committee.—Messrs. Barrett, Beddard, Dollar, Mulvey, Mason, Simpson, Villar, and Wragg; Professors Edgar, McFadyean, and Penberthy.

Steel Memorial.

The PRESIDENT: The next business is to appoint a committee in the matter of the Steel Memorial. I am informed by the solicitor that a committee was to have been appointed, but that it never was.

Mr. DOLLAR: I believe that a committee was appointed. The solicitor has omitted what, to my mind, is a much more important fact, namely, that the committee has done nothing, and that it has never attempted to carry out the scheme under which we accepted this trust money, and although one of the essential factors of this scheme is that a medal should be awarded annually, no such medal has been awarded. Therefore, in proposing that Professor McFadyean and Professor Edgar be members of the committee, I should like to add a recommendation that the committee be instructed to proceed this year with as much speed as possible to consider and recommend to the Council the recipient of the medal.

Professor EDGAR: I think the reflections of Mr. Dollar on this committee are not quite correct. The sum of money was to accumulate until it reached a given amount before anything was done with it.

Mr. BARRETT: It was to reach £80.

Mr. DOLLAR: I think that is not quite correct. Originally a gold medal was proposed, and under those circumstances it would have been necessary for the money to have accumulated.

On the motion of Mr. Fraser, the following gentlemen were appointed members of the Steel Memorial Committee:—The President, the Treasurer, Professors Shave, McFadyean, W. O. Williams, Dewar, Pritchard, and Edgar; Messrs. McIntosh McCall, Mulvey, and Dollar.

On the motion of Mr. Trigger, seconded by Mr. Dollar, it was resolved that the Committee should meet before the next Council meeting to advise and report to the next Council meeting as to the best mode of awarding the Steel Memorial medal for the current year.

Public Health (Scotland) Bill.

The SECRETARY read the report of the Parliamentary Committee which reported that the sub-committee, accompanied by the solicitor, waited upon the Lord Advocate, and, in his unavoidable absence, saw his principal secretary, who after hearing the statements of the various members of the deputation, promised to represent them to the Lord Advocate, and, without giving any pledge, said he thought that they would receive favourable con-

sideration. The deputation had reason to be pleased with the result of their attendance. The report also stated that the solicitor reported the Bill had left the Standing Committee, and was now before the House, and would probably come on very shortly.

The PRESIDENT: The Committee realised the fact that the matter is not quite settled yet. The probabilities are that the Bill will be passed, but there are certain questions raised as regards the sanitary inspectors having powers equal to those of the medical officers of health, and there are vigorous protests to be made, so that the passage of the Bill is not absolutely insured, and it is well for us still to keep ourselves alive on the point until the Bill is safely through. It was thought that if this was reported to the Council meeting, the profession would be informed through our report that the Bill is not absolutely safe yet, so far as we understand.

On the motion of Mr. DOLLAR, seconded by Mr. VILLAR, the report was adopted.

The following notices of motion were on the agenda paper:—

1. By Mr. TRIGGER:

> To ask the Council to vote their thanks to those Members of Parliament who had kindly assisted in the passing of the Public Health (Scotland) Bill.

2. By Mr. DOLLAR:—

> That the thanks of the Royal College of Veterinary Surgeons be suitably conveyed to J. W. Crombie, Esq., M.P., The Hon. Alan de Tatton Egerton, M.P., Captain Jessel, M.P., and such other persons as may have assisted us during the passage of the Public Health (Scotland) Bill through Committee, for the kind interest they have shown and support they have afforded.

Mr. TRIGGER: Mr. Dollar and myself have arranged to ask permission to withdraw these resolutions, but I beg you to allow me to express to the profession generally my thanks as president during my year of office for the very great assistance they have rendered me in the question of the Scotch Bill. I have letters from members of our profession enclosing letters from members of Parliament, and from gentlemen who have approached their members and sent in the correspondence. Therefore, sir, in asking you to allow us to withdraw these motions with a view of bringing them on again when the Scotch Bill is through Parliament, I ask you to allow me to take this opportunity, in order that it may go to the profession, to express the thanks which I, personally, as the late president, tender to the profession for the assistance they have rendered me in the matter. Mr. Dollar agrees with me, and we will ask you to allow us to withdraw these motions for the present.

Mr. SIMPSON: I move that permission be given by this Council to allow the motions to be withdrawn.

Mr. VILLAR seconded the motion, which was agreed to.

Professor DEWAR: Before you pass from this subject, I would like to give the Council a little information about what is being done in connection with it. It will be easily understood that the Public Health (Scotland) Bill being a Scotch Bill, has been principally moulded and remoulded in the Scotch capital, and only last week there was a move in that direction. I have in my hand a type-written amendment which is proposed in connection with Section 43 in relation to the inspection of meat; and there was a meeting yesterday of several of the Scotch members in connection with this very subject at the House of Commons, when some divergence of opinion occurred regarding the amendment. It was there proposed that a meeting should be called for Wednesday—a private meeting, of course, but several of those in Scotland who are particularly interested in it were invited to attend—within the show-yard of the Agricultural Society at Glasgow, if the Bill is not passed in the

interval. I was asked to mention that Dr. Cameron, one of the Scotch members, has given notice that he is going to propose that one of the clauses in Section 43 be deleted from the Bill altogether. I hope the efforts of our Parliamentary Committee will not be relaxed, that they will not think it is safe, and that a very close watch will be still kept on what is being done in connection with the Public Health (Scotland) Act.

Notices of Motion.

Mr. BARRETT gave notice of his intention to move, "That it be an instruction to the General Purposes Committee that the ventilation and acoustic properties of the Council room should be improved."

The PRESIDENT said it should be taken as an instruction to the committee.

Mr. WRAGG: I beg to give notice of motion of an alteration of bye-law 16. It is only an alteration of the date from April 1st to April 30th.

Question by Professor W. O. Williams.

Professor W. O. WILLIAMS: I wish to ask, sir, a translation of bye-law 55, which says: "No candidate shall be eligible for any examination unless a certificate of his qualification be signed by the Principal of the College at which he has been educated, and transmitted by the Principal to the Secretary of the Royal College of Veterinary Surgeons as acting for England, or to the secretary acting for Scotland, not less than seven days prior to such examination." I want to know if a student can leave any institution and go to another school or institution, and stay there for a week or two and then be eligible for examination?

The PRESIDENT: It rests absolutely with the Principals.

Professor W. O. WILLIAMS: Then, sir, do you mean to say that you will give an instruction to your secretary that he must accept a signed statement by the Principal of a College?

The PRESIDENT: That is so; the bye-law provides for it.

Professor W. O. WILLIAMS: Then if the same certificate is presented you say you are bound to do so?

The PRESIDENT: By the bye-law, yes; we cannot get out of it.

July Examinations, 1897.

The Written Examination was held in London on the 8th July, and the Orals and Practicals on and between the 13th and 17th July.

The following students passed their Final Examination, and were admitted members of the Royal College of Veterinary Surgeons, with the exception of Messrs. C. E. Perry and A. J. Hines, who are under the required age:—

Mr. S. T. Amos.
" P. M. Evershed.
" A. F. Harber.*
" R. W. Hall.
" J. R. Jackson.
" A. Olver.*
" J. T. Thurston.
" F. T. Walden.
" B. E. Wooster.*
" P. E. Hoyland.
" F. M. Skues.
Mr. J. B. Collyer.*
" F. C. Gillard.
" A. J. Hines.
" A. Miller.
" C. E. Perry.*
" W. J. Watt.
" S. B. Woolatt.*
" R. Wood.*
" W. V. Allen.
" W. F. Hughes.
" A. M. Bruce.

Marked thus * passed with second class honours.

Mr. S. Dixson.
„ J. A. Hewson.
„ C. Goundry.
„ F. J. Pringle.
„ T. McGhee.
„ J. F. Jewell.
Mr. H. J. A. Bradbury.
„ H. K. Tasker.
„ T. B. Gresham.
„ R. Hudson.
„ C. D. Stewart.

The following students passed their Third Examination :—

Mr. W. H. Anderson.*
„ G. W. Bloxsom.
„ R. W. Carless.
„ W. Cranston.
„ T. Elliott.
„ H. Gamble.
„ E. Peacey.
„ C. F. Parsons.
„ P. W. D. Smith.
„ H. A. Woodruff.
„ W. R. Williams.
Mr. C. W. Abrams.
„ E. Brown.
„ A. H. Cory.
„ D. Chalmers.
„ E. T. Goodall.
„ G. P. Knott.
„ H. W. Percy.
„ C. Radway.*
„ P. J. Simpson.
„ T. Wolsey.
„ A. Whicher.

The following students passed their Second Examination :—

Mr. R. C. Baxter.
„ H. Burrell.
„ D. S. Dickman.
„ G. Lockwood.*
„ J. Lee.*
„ J. H. Poles.*
„ C. E. Rix.*
„ D. H. Rait.*
„ E. L. Siddall.
„ J. J. B. Tapley.
„ G. H. Wooldridge.*
„ A. M. Brodie.
Mr. R. L. Green.
„ J. Cane.
„ H. H. Jeffries.
„ W. Lawson.
„ W. R. Neale.*
„ A. L. Purdy.
„ C. Roberts.*
„ J. P. Stableforth.
„ R. Stokoe.
„ J. M. Tate.*
„ E. A. Wilshaw.
„ H. G. Allen.*

The following students passed their First Examination :—

Mr. H. Anthony.
„ T. G. Bush.
„ G. H. Broad.
„ P. F. B. Bassett.
„ H. Cooper.
„ J. A. Dixon.
„ E. S. Gillett.
„ K. Hewlett.*
„ A. Leaning.
„ J. Nicholas.
„ H. A. Reid.
„ J. T. Share-Jones.
„ H. Thackeray.†
„ G. Tucker.
„ E. J. Wadley.
Mr. H. H. Aldred.*
„ H. H. Barker.
„ P. V. Beatty.
„ E. Child.
„ R. J. Collings.*
„ W. G. Flanagan.
„ H. Greenfield.*
„ G. D. Horsey.
„ E. Nicholson.
„ W. N. Rowston.
„ W. S. Stevens.
„ H. Sanderson.
„ C. Tyler.
„ L. M. Verney.
„ C. M. Wilson.
Mr. A. Macfarlane.

ARTHUR W. HILL, *Secretary.*

Marked * passed with second-class honours.
„ † „ „ first „ „

(*To be continued.*)

WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE Fourteenth Annual General Meeting was held at the New London Hotel, Exeter, on April 22nd last, under the presidency of Mr. P. H. Chase, of Tiverton. The other members present were Messrs. Downes, Barrett, Dunstan, Heath, Collings, Penhale, Elder, Bloye, Golledge, Baker, Howard, Place, and Nelder, Hon. Sec. Visitors : Messrs. Collings, Hewlett, Southey, Watkins, and Professor Hobday.

A move was made, as soon as all were assembled, to the stable yard, where Professor Hobday performed the operation of median neurectomy on a horse, the subject of chronic tendonitis in the off fore leg. The animal was cast by means of hobbles on the off side, the top legs secured by cross-hobbles, and the under leg pulled well forward by means of a rope round the fetlock. The seat of operation was carefully denuded of hair, and rendered aseptic, and the skin anæsthetised by ethyl chloride sprayed on ; then a mixture of cocaine and eucaine in solution was injected under the skin, and a period of three to four minutes allowed to elapse before commencing the operation to allow of the necessary stage of anæsthesia being reached, a small incision was next made directly over the median nerve as it passes inside the elbow and the nerve itself promptly exposed, and a piece about $1\frac{1}{2}$ inches in length excised, with but the slightest appreciable sign of pain at the moment of division of the nerve only. At no other period of the operation did the animal evince the slightest sign of pain. No twitch was used after casting. The edges of the wound were then united by a couple of close silk sutures, and the patient allowed to rise. He was immediately walked and trotted, and went perfectly sound—before the operation he was very lame.

The meeting was held directly after the operation, the President, Mr. H. P. Chase, taking the chair.

Letters and telegrams of apology for non-attendance were read from Messrs. Olver, Ascott, Seldon, W. Penhale, and Capt. Killick.

The minutes of the last meeting were read and confirmed, and after the presentation of the annual report, which was a very satisfactory one, by the hon. sec., the election of officers was proceeded with.

Mr. Wm. Penhale, of Holsworthy, was proposed by Mr. ELDER, and seconded by Mr. DOWNS, as president for the ensuing year, and a unanimous vote was passed in favour of his election if he would consent to accept the post. Mr. Penhale, not being present, has since been communicated with, and has accepted.

Mr. Dunstan, of St. Mellion, was elected hon. sec. on the proposal of Mr. BLOYE, seconded by Mr. ELDER. The post of hon. treas. to be retained by Mr. Nelder.

A very hearty vote of thanks to Mr. Nelder for the very able and efficient manner in which he had performed the duties of secretary during his period of office was proposed by Mr. BLOYE, and seconded by Mr. PENHALE, and carried unanimously.

On the motion of Mr. BLOYE, seconded by Mr. ELDER, it was decided to allow the secretary the help of a shorthand writer at future meetings of the Society.

Mr. W. PENHALE thanked Mr. Chase for the courtesy and energy he had displayed during his presidency, and proposed that a very hearty vote of thanks be accorded to him ; this was seconded by Mr. BLOYE, and carried unanimously.

Mr. Adams, of Okehampton, was proposed as a member of the Association by Mr. DUNSTAN, and seconded by Mr. BLOYE.

Plymouth was decided on as the next place of meeting.

Professor HOBDAY next read his paper:—

THE CHOICE OF A LOCAL ANÆSTHETIC FOR SURGICAL OPERATIONS.

BY FRED. HOBDAY, M.R.C.V.S.

When honoured by a request from the Secretary of your Association for a paper, I sought about some time for a subject, and at last fixed upon "The Choice of a Local Anæsthetic for Surgical Operations" as a title. In addition, by the courtesy of Mr. Chase and Mr. Nelder, I have been able to supplement it by a practical demonstration of the effect of two anæsthetics on the living subject during the performance of the operation of median neurectomy which you have just witnessed.

The subject of local anæsthesia is one which concerns every practitioner who operates, and one which covers some fresh ground as well as much which has been gone over before. In my paper to-day I propose to include only those local anæsthetics which are used for surgical operations, and not those such as clove oil, iodoform, etc., which are used for medicinal purposes.

Local anæsthetics are made use of for minor operations on all our animals, and are well worthy of our notice, both with the view of alleviating pain and for enabling operations to be performed more neatly; still, in all cases we must first consider the safety of the patient, and, on account of the danger attending the use of some of them from systemic absorption, we must be prepared to know something about their toxicological actions, if any, and the limit of dose to which we can proceed with safety.

I propose to discuss the local anæsthetic values of cold water, ice, ether-spray, ethyl-chloride, eucaine, cocaine, and guiacol; and to deal only with those points which I think will be of interest to those of us who are engaged in every-day clinical work.

Cold water.—With reference to the first four, viz., cold water, ice, ether, and ethyl-chloride, the degree of anæsthesia depends chiefly upon the amount and intensity of cold produced. The anæsthesia following the application of cold water, even in the coldest weather, is very transient; and it is only in very minor operations that we are able to demonstrate its value.

Ice.—If we go a stage further, and apply ice, the degree of anæsthesia obtained is of a deeper kind, but still very transient, besides which we have the disadvantage of not always being able to obtain it when required.

Ether, ethyl-chloride.—In ether and ethyl-chloride we have drugs, by the aid of which we can artifically freeze the parts, and thus deprive them temporarily of sensation. They each possess the power of abstracting heat from the tissues, and, if the application be prolonged for a sufficient length of time, of freezing them into a solid mass. Of the two I think that the results obtained by ethyl-chloride are rather better than those of ether. It seems to me to act quicker, and to produce an anæsthesia which lasts longer.

In all cases where any of the above are used it is scarcely needful to say that the effect is manifested much quicker and better if the hair be previously removed, either by scissors or, better still, by shaving, and the parts made as dry as possible. With agents which produce freezing, care must always be taken not to maintain the parts in this condition for too long a time, or necrosis is likely to follow as a sequel. About one or two minutes is what I have usually allowed, and I have not as yet had any bad effect of this kind. They are best suited for minor operations of the skin, such as the lancing of abscesses, the removal of superficial or subcutaneous tumours, or cysts, or for merely making incisions.

They are not so suitable for operations involving the cutting through of

thick muscular tissues, as when frozen it is not easy to take up blood-vessels if required, and pain returns again as soon as the parts become thawed. Again, in operating on thick muscular tissues, the warm blood which follows a stroke of the knife interferes with the freezing action of the anæsthetic.

They have the advantage over other drugs of not being in any way absorbed, so as to produce toxic effects, unless inhaled through the respiratory passages, and even in that case plenty of warning would be given by the patient. Ether is usually applied by the aid of a spray apparatus, and ethyl-chloride is now conveniently supplied in tubes, the heat of the hand being sufficient to cause a fine stream to be directed wherever desired.

Anæsthesia is complete when the parts turn a whitish colour and feel hard to the touch. This takes place in from half-a-minute to a minute and a half, and lasts for about two minutes. In hot weather, on account of the more rapid evaporation which takes place, the effect is manifested rather more quickly than in cold weather. For operations on the cornea of the eye the above are not used on account of the amount of irritation they produce.

Turning from these very superficial anæsthetics, we have next to consider two others whose manifest effects are certainly much deeper and more prolonged, viz., cocaine and eucaine. In using these we have a distinct element of danger to contend with, in that they possess toxic properties. It is necessary, therefore, that before making use of them we shall know to what extent we may proceed with safety. Each of them occurs in the form of a crystallized powder, whereas ether and ethyl-chloride are liquids. Cocaine is a vegetable alkaloid, obtained from the leaves of the coca plant, whilst eucaine, which has been recently discovered, is a chemical preparation possessing exactly the same formula. The compounds which we make use of are the hydro-chlorate.

Cocaine hydro-chlorate. It is readily soluble in cold water, but decomposes on boiling, and the solutions generally made use of vary from one to ten per cent. It should always be made fresh when required as decomposition takes place, and even after a few days the solution is not to be depended upon. If it is absolutely necessary to keep it in solution, a small quantity of salicylic acid added to it will help to preserve it for a longer time. When in solution it is readily absorbed into the system from subcutaneous, serous or mucous surfaces, particularly from the first named.

It is of especial value for the removal of tumours, or for cutting into some tissues. Its effect is manifested around the seat of injection for a space of from half-an-inch to an inch and a half. After an injection complete local anæsthesia is produced in from three to five minutes, and lasts about 20 or 25 minutes.

Superficially it can be used to deaden pain when painted on parts where the skin is thin, such as the under surface of the abdomen and thigh of dogs, cats, and other small animals, but on the thicker parts of skin its external use is not encouraging. On the cornea its effect is splendidly shown in from one to three minutes.

Eucaine hydro-chlorate.—Its results are somewhat similar, although there are some differences which must not be overlooked. The chief advantages over cocaine claimed for it are: first, that it is cheaper, secondly, that when in solution it keeps without decomposing; thirdly, that the solution can be boiled, and thus rendered sterile, without altering the anæsthetic power of the solution; and, lastly, that it is less dangerous to use, the toxic dose being larger. At present opinions differ very much as to whether its anæsthetic properties are as good as cocaine; some observers state that it produces a deeper and more lasting anæsthesia, and others make the opposite assertion.

My own observations, made upon about fifty cases in horses, cattle, dogs,

and cats, lead me to think that it is not so valuable for surgical operations as cocaine in veterinary practice, except for anæsthetising the cornea. Anæsthesia is not produced so rapidly, and even although in some cases we allowed five, ten, and even fifteen minutes to pass before attempting to operate, the results were not in any way comparable to those obtained by using cocaine. We have had some especially favourable cases for comparing the respective values of the two drugs. Such, for instance, as the application of cocaine to one eye and eucaine to the other at the same time in the same animal; the removal of multiple tumours from the same part of an animal, using cocaine for one and eucaine for another.

We made one discovery which I have not seen mentioned in any other accounts of this drug, and that was that by using a mixture of cocaine and eucaine together in solution we got the better and more rapid anæsthetic properties of the cocaine and at the same time a greater security from toxic effect; for, as I have already stated, the toxic dose of eucaine is certainly slightly larger than that of cocaine. I consider this fact of some importance, as when desirous of producing local anæsthesia in a small animal in which there would be a danger of giving an overdose of cocaine, I should certainly advise a solution of the mixed drugs.

With regard to the toxicology—a knowledge of the poisonous doses and symptoms produced by each of these drugs is of the utmost importance, as ignorance of these points may lead both patient and operator into serious consequences, particularly as we are not yet acquainted with a certain antidote.

With cocaine, in cats and delicate breeds of small dogs, certainly not more than from half to three quarters of a grain can be employed subcutaneously with safety. I have lately had the mishap to lose one patient, a cat weighing $5\frac{1}{2}$ lbs., from the subcutaneous use of one grain. In the hardier breed of dogs not more than two grains for a dog the size of a fox terrier, or four grains if about the size of a retriever or collie.

In horses and cattle it is not advisable when operating to use more than ten to twelve grains.

In the case of the horse, the largest dose I have seen used at one time has been a dram, the result being to make the animal very excited and almost frantic for a while, the effects gradually passing off.

The reason why an over medicinal, though not actually toxic dose, must be avoided when operating is that one of the symptoms produced is that of spasmodic clonic involuntary muscular twitching, which interferes with the progress of any operation requiring delicate manipulation and dexterity. I have seen as small a dose as ten grains produce this in a cab horse when used to aid in the performance of plantar neurectomy.

The symptoms which follow injection of cocaine are: In two or three minutes the animal becomes unusually quiet, there is a constant licking of the lips, and a flow of thin watery saliva, which collects at the back of the pharynx and around the lips. Hyperæsthesia is well marked, the ears being moved backwards and forwards at sounds.

Up to this point no alarm need be felt. The next stage is that of uneasiness and violent clonic involuntary spasms of all the voluntary muscles of the body, particularly noticeable in those of the jaws and limbs at frequent intervals. These interfere with delicate operative measures, and are, besides, if at all violent, a symptom of great danger. The patient should at once be released from all restraint, put in the fresh air, and antidotal measures adopted.

No certain antidote is as yet known, but it is found that either inhalations of nitrate of amyl, or subcutaneous injections of morphia diminish the force and frequency of the fits.

With eucaine the danger from poisoning is not quite so great, as the amount tolerated is slightly larger than that of cocaine. The operator may with safety give about one-fourth as much again as in the case of cocaine. For example, a cat in which a local anæsthesia was attempted by the use of one grain of eucaine, upon two separate occasions without any local symptoms, was poisoned a few days later through unfortunately using the same amount of cocaine.

The extreme limit of safety in the case of the dog and cat is about one-fifth of a grain to each pound of body weight. In the horse there are very few cases which would need more than twenty grains of eucaine, and even this amount will produce less twitching and consequent interference with the operator than would result from ten or twelve grains of cocaine. One dram is the largest amount I have ever given at once, and the symptoms produced were not in any way as severe as those produced by a similar quantity of cocaine in the same animal.

The symptoms which follow eucaine do not follow so rapidly as with cocaine. There is certainly hyperæsthesia and salivation, but not to the same extent, and the clonic spasms do not commence at such an early stage, nor do they occur at such short intervals. They are, however, very violent when they do occur. I think, too, that the animal retains consciousness for a longer period before death.

It will thus be seen that in using solutions of either of these drugs the greatest care must be taken for the safety of the patient, and in this respect they differ very greatly from the ether-spray or ethyl-chloride.

The last drug which I purpose dealing with, known as guiacol, is one, from the accounts of which, I had hoped great things, but up to the present I have been somewhat disappointed. I cannot say that my experience has been large, being limited to some twelve cases, but the results have been various, and on several occasions I have had to fall back upon cocaine. Its anæsthetic effect was first observed by a French chemist, who applied it in the form of an ointment to relieve a painful burn. Since then it has been used hypodermically by several observers for the production of local anæsthesia, the opinion of some being that it is more powerful than cocaine, and at the same time has the advantage that ten times as large a dose can be given without ill effect or any unpleasant sequel. It may sometimes cause sudden lowering of temperature and collapse. The drug is directed to be mixed either with water or olive oil, in the proportion of from 1 in 20 to 1 in 10, anæsthesia being produced in from five to ten minutes. As I said a few minutes ago, I have only tried it in a dozen cases, and the results have been various. In one case of amputation of a cat's injured tail, before operating we allowed five minutes after injecting the fluid, and the animal evinced no pain. Again, for stitching up skin wounds or for painting over wounded surfaces the results have been good after seven or eight minutes' continuous application; but for removing tumours and operations of that kind the anæsthesia was not to be compared with that of cocaine. I have, however, been able to satisfy myself that its toxic property is very much less than that of cocaine.

Before concluding my paper I must refer to the original title, viz., "The Choice of a Local Surgical Anæsthetic," and briefly make the selection.

So far as my experience goes at present, if I had to choose for a trivial operation, such as the opening of an abscess or the removal of a non-ulcerating fibroma, I should fix upon ethyl-chloride; but for an operation involving deeper structures I should select either a mixture of eucaine and cocaine or cocaine alone. There is plenty of room in the field of therapeutical research for the discovery of an ideal local anæsthetic, and by an ideal one I mean one by whose aid the desired effect can be produced fairly rapidly, deeply, and without fear of poisoning the patient or of subsequent necrosis or other damage to the parts.

I trust that you will give me the benefit of your experiences with any of the drugs I have named, or any others which I have omitted, as it is chiefly by the interchange of ideas that we can hope to make progress.

Discussion.

Mr. CHASE rose and said we all owed a deep debt of gratitude to Professor Hobday for coming here to give us such an instructive and painstaking paper, and invited gentlemen to commence the discussion.

Mr. BOYLE said he was somewhat loth to start, but he considered that Professor Hobday ought to be congratulated on the very able manner in which he conducted the operation of median neurectomy at the commencement of the proceedings. Coming to the question of local anæsthesia, he was most enthusiastic on the use of cocaine, especially for eye cases, and advised caution against giving an overdose.

Mr. GOLLEDGE expressed his sense of gratitude for the very able paper, and could not see that the operation of median neurectomy could be permanently successful in cases of broken-down tendons, but would like to hear the opinions of anyone who had experience of it.

Mr. F. E. PLACE added his thanks to the Professor. The operation in question he had no doubt was useful, but he had heard that it was practically useless. He considered cocaine to be especially dangerous to cats, even in very small doses.

Mr. ELDER had no fault to find with anything he had seen or heard that day, and was gratified to see such a successful meeting. He was a thorough believer in the use of cocaine, and ethyl-chloride should be used with it. He had great pleasure in thanking Professor Hobday for his instructive paper and demonstration.

The PRESIDENT now said that as time was on the wing it was desirable to bring the meeting to a close. It had been really a most instructive lecture, and he considered that the effects were most gratifying.

Prof. HOBDAY, replying on his paper, said he was much obliged for the kind words and expressions he had just listened to. He had performed the operation of median neurectomy on 72 horses, and there had been no cases of sloughing of the hoof, and only one softening and consequent breakdown of the tendons, and up to the present he considered that the results had not been bad.

The meeting now came to a close, and Mr. Chase entertained the company to a very enjoyable dinner, after which the usual toasts were drunk.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE Quarterly Meeting was held at the Grand Hotel, Manchester, on Thursday, May 27th, 1897. Tea at 5 p.m. Business, 6 p.m. Present:—The President, J. H. Carter, Esq., in the Chair, and the following members were also present:—Messrs. W. A. Taylor, J. B. Wolstenholme, Laithwood, Holburn, Hall (Manchester), Jackson, Edwards, Hart, Ackroyd, Hopkin, Hall, Stent, Woods (Wigan), Gubbin (Glossop), Ingram. Visitors:—Hobday, Jones (Liverpool).

On the proposition of Mr. W. A. TAYLOR, seconded by Mr. LAITHWOOD, the Minutes of last meeting were taken as read.

Mr. LAITHWOOD nominated Mr. ROBERT STAFFORD, M.R.C.V.S., of Crewe, for membership.

Mr. HOLBURN was duly elected a member of the Association on the proposition of Mr. WOLSTENHOLME, seconded by Mr. W. A. TAYLOR.

The PRESIDENT proposed that the Association grant £10 10*s.* towards the Walley Memorial Fund.

Mr. ACKROYD seconded the proposition, which was carried.

Mr. WOLSTENHOLME, in Mr. S. LOCKE'S absence, proposed that the charge for tea to members be abolished, and that it be paid for out of the funds of the Association.

Mr. HART seconded, and Mr. W. A. TAYLOR supported; the proposition was carried unanimously.

Mr. W. A. TAYLOR proposed, the PRESIDENT seconded, and Mr. J. B. WOLSTENHOLME supported, and it was resolved, that a letter of condolence be sent from the Society to Mr. E. Faulkner in his sad bereavement.

Dr. DELEPINE then read a paper on the Examination of Milk. (This paper will be published, *in extenso*, in the *Journal of Comparative Pathology and Therapeutics*.)

Mr. WOODS (Wigan) considered an apology for the poor attendance was due to Dr. Delèpine. This was explained by the fact that it was not due to any lack of interest in the paper, but to its being the veterinary surgeon's busiest time. Alluding to Dr. Delèpine's remarks respecting the cleanliness of stables, he was of opinion that most of these in towns and country districts were not only insanitary, but the condition of the people milking were certainly such as ought to be greatly improved. He asked whether it was now agreed among scientists that the tuberculin test was absolutely reliable, as he thought it was, if carried out under proper conditions. He had used tuberculin which was absolutely inert, hence his inquiry. It was important to emphasise the fact that unless they had udder tuberculosis no bacilli would be found in the milk. With regard to legislation, it would be a comfort to cattle owners to know that the only cows to be summarily dealt with would be those with the udders affected, and that the rest might be dealt with by isolation. Respecting the experiments made by the Doctor and others, so far as he knew, these had been chiefly made by the injection of tuberculous milk into the peritoneal cavity subcutaneously. It would, however, be a very great advantage if the effect of gastric juice were tried on tuberculous milk. It seemed to him that the stomach might probably have a considerable effect on the bacilli.

Mr. JACKSON (Liverpool) said he had been much interested in Dr. Delèpine's remarks, especially those in relation to town shippens being a disgrace. He admitted that in some cases they were a disgrace; but recent investigations at Liverpool showed that 29 per cent. of country milk to 2 per cent. of town milk was contaminated by tuberculosis. Though insanitary shippens might be the cause of a good deal of this, the chief cause was tuberculosis of the udder. In his opinion, a cow with a clear udder, however tuberculous in the lungs, would not produce tuberculous milk. As to tuberculin, he had obtained the best of results from it. He believed the Cowkeepers' Association of Liverpool intended suggesting that any cows suffering from any disease of the udder should be reported to a veterinary surgeon, and that if the Medical Officer of Health was going through the animals he ought also to go through the men handling them. He would like to know from Dr. Delèpine whether a cow, suffering from general tuberculosis, but with a healthy udder, would produce tuberculous milk?

Mr. HOPKIN, in thanking Dr. Delèpine for his interesting paper, said he believed that the milk received far more impurities after it left the cow. The cleanliness of dairies, cowsheds, attendants, and utensils was of vital importance in connection with the milk, and it ought to receive greater attention. If the new Company referred to conducted its dairy on cleanly and sanitary conditions he had no doubt that it would be a financial success, and a benefit to the community using the milk. From the Doctor's remarks, he took it for granted that tuberculosis was not conveyed from cows to man except through their udders which were affected with tuberculosis.

Mr. WOLSTENHOLME expressed the pleasure he had derived from Dr.

Delèpine's paper. It was their duty, as practical veterinary surgeons, to work towards the adoption of measures to protect the community. Until recently, one of the chief factors in preventing the veterinary surgeons from impressing upon the public generally that there was danger in the consumption of tuberculous flesh, and in drinking milk infected with the same bacillus, was the opposition of a certain section of the medical profession themselves. With respect to flesh, it had now been demonstrated that muscular tissue, plus portions of lymphatic gland, when tuberculous, would produce the disease on ingestion.

Mr. W. A. TAYLOR thanked Dr. Delèpine for his kindness in preparing and reading to them such an able paper for their consideration. He thought the result of Dr. Delèpine's investigations pointed out that it was necessary that milk should be more carefully withdrawn from the animal secreting it; that the sanitary operations and surroundings of the milk, from the moment of withdrawal to the time it was consumed, should be under closer supervision; and that the purveyors of milk should also be held more responsible, in a legal sense, than they were at the present time, even though the public had to pay more for the commodity. He understood Dr. Delèpine to say that unless the mammary gland of an animal suffering from tuberculosis be also tuberculous there was no fear of contamination in the human being consuming the milk from that animal; but he would like to be further assured on this point. Out of 24 samples of Manchester milk, he understood Dr. Delèpine to say that they were all from tuberculous cows, and that 12 showed evidence of udder disease. In five of these tubercle bacilli were found. He did not know that they were told by Dr. Delèpine what the nature of the disease in the other seven was. Was it of a tuberculous nature? If so, could he account for the fact that he did not find tubercle bacilli in the milk? The milk from the other 12 cows, or the remaining half, which were certified as suffering from tuberculosis, was found to be free from tubercle bacilli. He would like to know if his remarks regarding that were right. Mr. Woods had wisely drawn attention to the insanitary conditions in which animals are milked. In conclusion, he believed that tuberculosis was infectious from one animal to another.

Mr. LAITHWOOD joined with the others in thanking Dr. Delèpine for his very instructive paper. The question of the sanitary condition of byres and attendants should be brought to the front, as tuberculosis was one of the most important diseases they had to contend with, There were more deaths annually from it than from pleuro-pneumonia; and he did not see why compensation should not be made for tuberculosis as for pleuro-pneumonia. They ought to endeavour to obtain total compensation, otherwise it would be difficult to stamp the disease out. It was not necessary to slaughter every animal affected with tuberculosis, but only those with tuberculous udders. Nothing would be done until they got compulsory measures with respect to the dairies supplying milk to our large towns. To do this, it would be necessary to have the co-operation of the medical profession. He thought that the New Milk Co. mentioned was a very great idea, and, doubtless, would be a successful one. If the British public would pay an extra price for a pure article, that article would very soon be produced: but there would be no encouragement unless an extra price were given for such milk. One thing he thought they should agitate for was the provision of cooled chambers on the railway vans, to convey the milk from the country to large towns.

Dr. Delèpine, responding, said the reliability of the tuberculin test, as named by Mr. Woods, depended on care and good tuberculin. Good tuberculin was tried by competent persons, and they must get their tuberculin, which was guaranteed by someone who was competent to test it. Further precautions, which were seldom taken, were necessary; for instance, it was important to

know that the temperature of the animal was free from great variations and not already febrile. It must also be ascertained whether the animal is in an advanced state of tuberculosis, as, if so, the tuberculin sometimes fails. As to the question of the tuberculous udder, he never found the milk infectious from cows whose udders were not affected. For practical purposes, therefore, it may be assumed that when the udder is not diseased the milk is not infectious. As to the difference between feeding and inoculation, it had been found that it was comparatively easy to produce tuberculosis in young animals, viz., young cats, pigs, and calves, by feeding them on tuberculous milk. So long as milk was capable of producing disease it was to be condemned. Mr. Jackson, apparently, had not caught his remarks on the difference between general tuberculosis and tuberculosis of the udder. Medical men considered the udder the essential part. Replying to Mr. Taylor's question as to the nature of the disease in the other seven cows, in five cows the mammitis was tuberculous; in the other seven, it was some form or other of *non*-tuberculous mammitis.

The PRESIDENT moved that a hearty vote of thanks be accorded to Dr. Delèpine for his most interesting paper.

Mr. HOPKIN seconded.

LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

A MEETING was held at the Angel Hotel, Peterborough, on June 29th, the chair being taken by the President, F. W. Wragg, Esq., F.R.C.V.S. Present: Messrs. H. Howse, Lincoln; T. Holmes, Bourne; W. A. Allott, Upwell; W. H. Brooks, Leadenham; R. W. Clarke, Horncastle; F. L. Gooch, Stamford; J. W. Gresswell, Peterborough; C. Hartley, Lincoln; Alex. Lennox, Crowland; J. Mackinder, Peterborough; T. A. Rudkin, Grantham; Captain Russell, treasurer, Grantham; E. C. Russell, hon. sec., Grantham; Jas. Smith, Huntingdon; J. E. Shacklock, Stamford; and T. W. Turner, Sleaford.

The minutes of the last meeting as printed in the veterinary papers were taken as read.

The SECRETARY read letters of apology for non-attendance from Professors Penberthy, Davis, Axe, and Pritchard; and Messrs. Kidd, Norgate, J. A. Clarke and B. Freer.

Mr. HARTLEY proposed, and Mr. CLARKE seconded, the election of Mr. Arthur L. Wilson, of Horncastle, as a new member. Carried unanimously.

Presidential Address.

Gentlemen, I return you my hearty thanks for the honour you have conferred by electing me President of the Lincolnshire Veterinary Medical Association. I can assure you it gives me great pleasure to occupy this position, and I shall endeavour, during my term of office, to uphold the reputation the Association has enjoyed for so many years.

My thanks are also due to the members for the loyal support they gave me at the recent election for members of Council, and I take this public opportunity of expressing my sincere gratitude to every member of the profession who recorded a vote in my favour, whereby I was returned at the head of the poll, a coveted distinction which I scarcely think I deserve.

The election this year was tame compared to that of 1896, when there were circulars without number, and a special number of a professional journal scattered broadcast throughout the profession, most of them indicating you should vote for certain candidates, and those alone. Fortunately, all were

not led away by tactics which would be no credit to an election of vestrymen. I regret the president for the year, one of the candidates for re-election, did not receive that support to which he was entitled, for the indefatigable manner he worked during his occupancy of the chair. Moreover, one candidate, a past president, was unseated, who not only during the time he has been a member of Council has done splendid work, but is always ready to travel any distance, read papers, give the benefit of his experience, and make the meetings of our veterinary medical associations popular and instructive, mostly bringing out a good discussion. It is by this stimulus and interchange of ideas that every man is roused to a better observance of his cases, so essential to make a scientific and practical veterinary surgeon. The election of the governing body of a great profession should be conducted with dignity, and should be free from that taint which is so often found in municipal and other elections.

This year an unfortunate mistake occurred in the voting papers. A paragraph stated you could vote for eleven candidates, whereas it should have been only eight. Directly the error was discovered, a circular was issued correcting it, and, as the president pointed out in his opening address, the only harm it caused was to entail a greater amount of work on the scrutineers, who thoroughly tested and analysed every voting paper. In no case was the position of a candidate altered in the slightest degree by the mistake.

The last annual meeting was the quietest I ever remember, and I believe I have attended over thirty. It suggests that the profession are so satisfied with the work of the Council during the past twelve months, that they thought it needless to attend for the purpose of criticising the report. Possibly the coincidence of our annual meeting and Derby day kept some away. Nevertheless, I regret the small attendance, and should be sorry to think the falling off in numbers was due to any lack of interest taken in the profession.

The admission of ladies to the examination for the diploma is a matter that has lately come to the front. The majority of the Council, acting under legal advice, which was to the effect that our Charter and bye-laws all pointed to the fact that the candidate should be of the male sex, refused to allow this lady to go up for her first examination. This decision is about to be contested in a court of law in Edinburgh, and as the matter is *sub judice*, it would not be politic to discuss it; but I must remark that I do not think ours a profession that a British lady should embark in, nor am I able to prophesy whether or no the verdict will be foreshadowed by the decision of Cambridge University. There was copied in *The Globe* last week the first verse of a poem entitled the "Vindication of Man." It appeared in the Jubilee number of *The Isis*, and reads thus:

> From Cambridge Town on joyous wires
> O'er Afric's sunny strand,
> O'er Swiss Cantons, or English Shires,
> Spitzbergen, Baffinsland,
> The message flies, they laugh who win,
> And Cambridge laughs to see,
> There are no female wranglers in
> The year of Jubilee.

The profession have agitated with much vigour to obtain a clause in the Public Health (Scotland) Bill sanctioning the appointment of veterinary surgeons as meat inspectors and inspectors of dairies; it is quite time these duties should be removed from the class of men to whom they are usually given. It is true that in some cases medical officers of health are called in to decide the question, whether meat is fit for human consumption, or whether a

dairy is a healthy place for the storing of cows, but I maintain that the veterinary surgeon, and he alone, is, by education and training, the only officer who should be entrusted with the work to ensure it being performed in a proper and satisfactory manner. I trust we shall be rewarded by a satisfactory settlement of this question. I am unable to say at present how the Bill has progressed, for, although I have watched the daily papers, if anything has been published it has certainly escaped me. I must tell you that there is much to thank our President for in the pains and trouble he has taken to bring about a successful result. Our ex-president, Mr. Simpson, has also done good work, both during his year of office and since. Other members of Council have also been indefatigable in their exertions to render every assistance, as also have other members of our profession. Judging from sundry items noticed in the solicitor's account for this quarter, I feel sure that no effort has been spared to get a proper recognition of the veterinary profession in this Parliamentary statute.

The use of mallein as a diagnostic agent in detecting latent glanders is one of the grandest discoveries in the veterinary scientific world, and the experience of those veterinary surgeons who have employed it, points to the fact that it is almost an infallible agent in diagnosing this disease. I have used it, and am constantly using it, and although I have injected some hundreds of horses, in only one case did it fail. It may be of some interest if I say that this animal, working by the side of a horse found to be glandered, shortly after developed a discharge from the nose, reacted to mallein, and, yet, after a most careful *post-mortem* examination I failed to detect the lesions of glanders in the lungs. Perhaps I have not any business to blame the agent. I have little doubt the disease existed, but the failure to discover it was due to myself. I do not believe there is the least possible risk in using mallein on a healthy horse. I have had the opportunity of watching those that have been injected, some of them for as long a period as three years, a few dying from other causes. I have had the opportunity of examining *post-mortem*, and in no case was there the least indication of the disease of glanders visible.

The London County Council, and it is in their district that the disease is most prevalent, have advanced a step towards compensating horse-owners for loss. Where signs of the disease are apparent then £2 is paid as heretofore, but when the existence of the disease is made evident by the re-action of mallein, then one-fourth of the value allowed by the Order is given. Owners are thus encouraged to use mallein and slaughter when reaction occurs. Some members of the profession maintain that horses affected with latent glanders, although they have reacted to mallein, might still be kept at work—their lungs possibly having only slight glanders lesions. To this opinion I am totally opposed, for I am convinced that these cases are quite as much a centre of infection, and as capable of transmitting the disease as animals showing the worst symptoms. No, I would have mallein very freely used, and every case responding slaughtered; by this means we should have a chance of reducing the number of cases to a minimum, and eventually stamping out the malady altogether.

I have no reason to doubt but that tuberculin is quite as useful a diagnostic agent in tuberculosis, as mallein is in glanders, but I have no practical knowledge of its use, I am unable to discuss its reliability or utility.

The Muzzling Order for Dogs, which has caused so much controversy, is, I feel, the best and most useful measure to diminish the disease of rabies, although it has been strongly opposed by, I believe I am right in saying, a majority of the community, which majority are scarcely competent to form an opinion. I think the profession, with perhaps a few exceptions, agree to the provisions of the Order. Still if it could be made universal throughout the whole of the British Isles, I believe it would have their more hearty approval.

Doubtless the Order that will be enforced by the Board of Agriculture in September will greatly assist in the prevention of the disease. I refer to that relating to the importation of dogs. I believe the owner will have to give notice when he imports a dog, his name and address will be taken, the destination declared, and an undertaking given that he will properly look after the animal, and isolate if required upon landing. A licence will be given; then if what some call the objectionable muzzle be applied, we stand a good chance of eradicating this dreadful disease, which has often caused death in the human subject.

The Board of Agriculture have decided that the dog shall wear a wire muzzle, and rightly so, too. What is the use of a leather one? It is as often round the neck as in its proper place. I maintain that a properly fitting wire muzzle is more humane and certainly more likely to prevent a rabid dog biting than one so easily got rid of. People buy a muzzle, put it on the dog, pay no regard as to its adaptability or fit, it hurts the dog and then they complain that muzzling is cruel. I must call your attention to a letter that appeared in the London *Daily Telegraph* and copied into *The Record*, when the muzzling controversy was in full swing. It was as follows:

> Sir,—I am a medical man and, when a student, was always taught, at the lectures on physiology given by Dr. Pavey and others, that rabies arises more frequently from toothache than any other cause, and generally brought about by the animal being half-starved. Such being the case, I fail to see how this proposed order is to eradicate the disease. It can only end in the greatest disappointment and endless inconvenience and misery to the poor animal.
>
> I am surprised that our leading physiologists have not taken the subject up long ago, instead of leaving it to the Veterinary Department, who can know little compared with medical men.—I am, yours truly,
>
> MEDICUS.

"I am a medical man." I feel glad "Medicus" began with that sentence. "Rabies brought on by toothache and starvation"! Comment on such lamentable ignorance is waste of time.

The Medical Officer of Health for Glasgow found fault with the veterinary profession—thought us not competent to perform the duties of meat and dairy inspectors. I trust he has seen the letter of "Medicus." Maybe he judges our profession by men of the "Medicus" stamp. Thank goodness! no living veterinary surgeon is so deficient in knowledge of the cause of a disease attacking both man and animals.

Gentlemen,—I must draw these few remarks to a close, knowing you are anxious, with myself, to hear our friend, Mr. Mackinder, on "Docking." I thank you for the kind attention you have given me during this short address.

Captain RUSSELL proposed a hearty vote of thanks to Mr. Wragg for his address, which had been on most interesting subjects connected with the profession, and he moved that it be printed in the veterinary papers. Mr. HOWSE seconded, and the motion was unanimously adopted.

The PRESIDENT, in acknowledging the vote, thanked them very much, but he felt that he had not done so well as he should like to have done. They accepted him as president, and they must also accept his shortcomings and errors.

The Proposed Benevolent Fund.

The PRESIDENT, referring to a letter which had been addressed to the Secretary, said the communication had reference to a veterinary benevolent society, which had been started by the Central Veterinary Medical Society. They had not yet made a fair start with it, and as he had only had an opportunity of attending one meeting, he was not well up in what they proposed to do, but it was thought they might establish a Victoria Veterinary Benevolent

Society, not in opposition with the one already existing in Manchester, but it was thought that in this Jubilee year they might try to provide for the wives and families of those unfortunate brethren of their profession who were not in the position to provide for them.

Mr. MACKINDER said he believed the Manchester Society only provided for their members.

The PRESIDENT said it was thought advisable in the new Society to provide for those who were not actually subscribers.

Captain RUSSELL: You will not have many subscribers then. He (Captain Russell) said he had great pleasure in proposing that this matter, which was of so important a character to the profession, and to all of them as veterinary surgeons, namely, to supply funds for the use of the widows and orphans in the event of their not being able to supply such funds by their own labours, be left for discussion at a future meeting. He had been a subscriber to the Manchester Society ever since he had had the honour of being a member of the profession, and he knew perfectly that that society had done a vast amount of good; but the funds of the Society were held entirely for subscribers to-day. He was rather under the impression that they would find that the Society in London would be of somewhat a different nature. He did not altogether hold with helping people who would not help themselves; but there were exceptional cases, of course, which should be taken into consideration. When a man, however, had a good practice, and did not insure his life or join such a Society as already existed, he should rather hold aloof from assistance.

Mr. MACKINDER seconded the postponement of the discussion, and cited a case of a member of the profession who had been crippled with rheumatism, and could not afford to pay his subscriptions. He was not able to receive anything because he was not a subscriber. He thought it a pity if such a case was to be entirely ignored.

The matter was then adjourned until the next meeting.

Mr. HARTLEY said he wished to ask the Association to do something, if only a very little, this Jubilee year, and become annual subscribers of, say, a guinea to the Royal Agricultural Benevolent Fund, or if they did not care to do that, would they subscribe a guinea to the Lincolnshire Agricultural Society? Considering they got a great deal of men living out of agriculture, he thought they should acknowledge the existence of these societies in some way.

The question was adjourned until the next meeting.

"*Some Diseases due to Nematode Worms.*"

A discussion then arose on Professor Penberthy's paper on the above subject, read at the last meeting, and Professor Penberthy wrote expressing his deep regret at not being able to attend, but he had been summoned to give evidence at the High Court of Justice, and could not leave London.

Mr. RUDKIN said he was sure they would all agree with him in being very sorry that Professor Penberthy was not amongst them. They thanked him last time for bringing that practical paper before them, and he, himself, had little to say on the matter. They were greatly indebted to the Professor for discovering the parasite in gastro-enteritis, and the real cause of inflammation of the abomasum. There was no doubt these parasites existed, but he did not think the majority of them used the microscope enough. He did not think he could suggest anything further than Professor Penberthy had, and that was to get the sheep on fresh land. Undoubtedly the parasites followed on old sheep. Little stock-holders, little farmers did not have this disease like large holders. If they could suggest anything which would remove the

ova or parasite from the land, agriculturists would be greatly indebted to them. As to the period of incubation he thought it was about five or six weeks, and Professor Penberthy had proved that to be so. As to the treatment, if they could only get their clients to do it not only the young sheep but the old sheep should be treated and isolated. After they were given vermifuges they ought not to be allowed to stray all over the pastures.

Mr. GRESSWELL said he was sorry at not being able to hear Professor Penberthy on this important subject, but he must say that during the time he was in Lincolnshire, in several districts, this disease in lambs had existed. They found it exist after every warm summer and wet autumn, and on several occasions they had traced the disease to ditches which had not been cleansed out, and there were also, perhaps, some ponds which had not been cleansed. As a rule they found it in the wet parts of the back end of the year. He had had some lambs during this year with tapeworm, and they found this existed more where there were a great many rabbits in the district. These lambs had been diseased with tape-worms very young, and it killed a good many of them. By "drinking" the whole flock they had been able to pull a good many of them round. As to the treatment, the lambs should be "drenched," and very carefully done.

Mr. JAS. SMITH said he did not know whether rabbits and tape-worms were in any way associated with the disease in the majority of cases. He had found tape-worm in lambs in places where there were the smallest number of rabbits in the country. They had had only one outbreak that they could trace to this parasitic origin, and he must admit that he was not familiar with it, and was puzzled as to the cause of the disease. He sent some stomachs, etc., to Professor Penberthy, and he pointed out that the disease was due to these parasites. He thought it would be a good idea to persuade their clients to have the lambs and the ewes treated as well.

Captain RUSSELL said he was very sorry he was not present to hear Professor Penberthy read this carefully prepared paper of his. They did not have a great quantity of this disease in their special neighbourhood, but if they did get it the cases were brought to them when in an advanced stage and the lambs dying fast. They did not seem to find out the origin of this *strongylus contortus*. Where did it come from, and how did it grow? Years ago the notion prevailed that worms in lambs were caused by flies, and there was a theory that they came from earth worms.

Mr. HOLMES expressed the opinion that every veterinary surgeon should impress upon his client the necessity of "drinking" his lambs early enough. He cited a case of a flock in which the lambs died freely, but they had never been drunk, and had never had anything done to them at all. He thought if veterinary surgeons could persuade the big flock masters to "drink" their lambs early the smaller men would follow in their wake. He treated a great many lambs last year and he found that after they drenched with the ordinary drinks a little quinine and sulphate of iron mixed with their food stopped the deaths very much indeed.

Captain RUSSELL mentioned a case of parasitic disease. They had been treating two cows for bronchial pneumonia and one died. He found both lungs consolidated and millions of parasites in each lung. They could pull them out in strings by the finger. He had been in practice 25 years but had never seen a cow—it was six years old, in such a parasitic condition in his life.

The discussion then closed, the PRESIDENT remarking that they were very grateful to Professor Penberthy for giving them his paper.

(*To be continued.*)

THE CENTRAL VETERINARY MEDICAL SOCIETY.

A MEETING was held on Thursday night, July 1st, at the Royal College of Veterinary Surgeons, Red Lion Square, Bloomsbury. Vet.-Lieut.-Colonel J. Kettle, president, occupied the chair, and the other fellows present were:—Messrs. A. L. Butters, W. F. Barrett, J. A. W. Dollar, T. C. Garry, H. Edgar, W. Hunting, Professor F. Hobday, Vet.-Lieutenant P. J. Harris, A.V.D., Professor J. McFadyean, Professor J. Macqueen, F. C. Mahon (hon. sec.), Vet.-Major J. Nunn, A.V.D., R. Porch, Professor J. Penberthy, W. Reekie, J. Rowe (hon. treas.), Whitlam-Smith, H. Singleton, Harold Sessions, F. Samson, W. E. Taylor, S. Villar, and H. Willis; and as visitors, Messrs. F. W. Billinghurst, H. P. Chase, and Professor Dewar, Edinburgh.

On the motion of Vet.-Lieutenant HARRIS, seconded by Mr. S. VILLAR, the minutes of the preceding meeting were taken as read, and were signed by the Chairman as correct.

Election of Fellows.

A ballot resulted in the unanimous election of the following gentlemen as Fellows of the Society: Vet-Major J. J. Philips, Woolwich, S.E., and Mr. Hagmier, M.R.C.V.S., of 413, Mile End Road, E.

The Sale of Veterinary Drugs.—A Denial.

The HON. SEC. read a letter from a firm of veterinary drug sellers denying a statement made at a preceding meeting that they issued a price list of the drugs they sold, to horse dealers and other private horseowners, offering to supply articles at the prices charged to members of the veterinary profession. In the absence of Mr. Gosling, who had complained of this procedure, the Secretary stated that at the previous meeting Mr. Gosling mentioned that when a client of his had come to pay his bill he demurred at the charge made for horse balls, and, producing the list in question, quoted the price at which they could be procured first hand. Mr. Mahon added that he had compared the price list which Mr. Gosling had got from his client with one forwarded by the firm with their letter, and he found the two to be identical.

The CHAIRMAN remarked that the price list was one of "spices, roots, seeds, barks, salts, mixtures, and sundries."

Professor PENBERTHY said the list was evidently intended for farmers and stockowners.

After some discussion,

Professor MACQUEEN submitted that the firm in question, assuming they issued these lists to private horseowners, which they denied, were perfectly at liberty to conduct their own business in their own way and in the manner they thought best.

Professor MCFADYEAN: I imagine that none of us have the least intention of remonstrating with them, and we know full well that we have no power to prevent them selling to anybody, but we also know that we have the power of ordering from whom we like. He moved: "That the Secretary write to the firm, enclosing the price list, and enquiring whether there was any foundation for the statement that this price list has been issued to persons who are not qualified veterinary surgeons."

Mr. REEKIE seconded the motion, which was adopted.

Resignation.—A Hon. Fellow on Foreign Service.

The SECRETARY read a letter from Veterinary-Captain Haslam, dated the 8th ult., which ran: "I regret having to resign my Fellowship of the Central

Veterinary Society. I am, however, proceeding abroad to East Africa, and I hope that in that new country I shall be able to render some little help to the end we all have in view, namely the advance of veterinary science."

The CHAIRMAN said he was sure they all regretted to lose Captain Haslam, who had accepted an appointment under the Foreign Office which would probably enable him to do some very good work. He was sure some member would propose a resolution wishing Captain Haslam health and happiness in his new enterprise and every opportunity of doing good work.

Veterinary-Major NUNN moved, and Mr. PORCH seconded, a resolution to this effect, which was carried unanimously.

Mr. REEKIE proposed, and Mr. H. EDGAR seconded, that during his absence abroad Captain Haslam be an honorary member of the Society ; and that the Secretary write to him informing him of his election as such.

The motion was unanimously adopted.

The Benevolent Fund Project.

The SECRETARY read a letter which he had received from Mr. Hurndall, Secretary to the Royal Counties Veterinary Society, intimating that he had duly submitted to his Society Mr. Mahon's letter with regard to the establishment of a Veterinary Benevolent Fund as a fit method of professionally celebrating the Queen's Diamond Jubilee. As, however, the attendance at the meeting at which the letter was read was not considered numerous enough to be representative, and as those present held somewhat divergent views, it was decided to call a special general meeting of the Royal Counties Society to consider the matter.

THE CONTROL OF TUBERCULOSIS AMONG ANIMALS.

[A paper read by Harold Sessions, F.R.C.V.S., Brighton, at the meeting of the Central Veterinary Medical Society, held at the Royal College of Veterinary Surgeons, London, July 1st, 1897.]

Origin of Name.—Tuberculosis is a name given to a disease which is caused by the growth or multiplication of a specific bacterium. The name is derived from the effect which the germ causes in the tissues in which it grows, and which can be seen by the naked eye. These growths are invariably in the form of little lumps, and the name tuberculosis, derived from the Greek, signifies little lumps.

Various Forms.—The disease assumes many different forms, and is known under a great variety of names; of these the most familar are, in human beings, phthisis, scrofula, tabes mesenterica, and lupus ; and in cattle, grapes, pearl disease, wasting, pining, wens, clyers, and chronic mammitis.

History.—The early history of the disease is very obscure. It evidently affected human beings many centuries ago, but it was only at the beginning of this century that the term tuberculosis was applied to any specific form of disease, and it was not until Dr. Koch's discovery, in the early eighties, of the tubercle bacteria, that the disease was recognised in its widespread form. In 1882 Koch found that in all cases of tubercular disease there existed a very minute fungus which could be examined under the microscope, grown experimentally, inoculated into other animals and produce tubercular disease. There is no need to elaborate the evidence on this point, as it is now fully accepted by scientific men and by the Royal Commission which was appointed to inquire into the prevalence and contagiousness of tuberculosis.

Bacillus Tuberculosis common to Various Species of Animals.—Having accepted the fact that in cases of tubercle there is present a specific organism,

the next point which arises is, whether this organism is common to various forms of mammalia, or whether each variety of mammals has a specific organism of its own. Drs. Martin and Woodhead were specially instructed by the first commission to carry out experiments on this point. The result of these experiments, which are published in par. 23 of the report, leave no reasonable doubt that the same organism causes the diseases both in man and other animals. Following out, however, the laws as we know them of evolution and development of species, it seems only reasonable to suppose that tubercle germs grown in any animal for a great number of generations, particularly by division, will acquire some slightly different peculiarity from the parent stock, and they may either acquire an increased or decreased virulency of power to those grown in other animals, and we ultimately might get a bovine and human tuberculosis, similar but not interchangeable, as we find is the case in some of the tænia.

In Domestic Animals.—The animals with which we are chiefly concerned are the domestic animals, and of these we find cattle and pigs are the ones generally affected, although we get occasional cases in almost all animals with which we have to deal.

In Pigs.—In pigs the disease is virulently contagious, frequently assuming an acute form and manifesting itself quickly by visible symptoms. As an illustration of the way in which tubercle is contagious among them, we have the following case: A farmer (without knowing it), had his pigs affected with tuberculosis, and for a considerable period they were unthrifty and unprofitable; he, at last, decided to get rid of all that stock of pigs and purchase a fresh supply. He sold one of these pigs to a dealer, and at the time she appeared in perfect health; a farmer happened to buy her without knowing where she came from or anything of her previous history. She had a litter of pigs within a short time of purchasing her; the small pigs were more or less unthrifty from the first. After they had been born about four weeks hard nodules developed in the sow's udder. I put this down at first to be the result of inflammation caused by the biting of the small pigs—a very common condition among sows. The pigs were weaned and placed with some others of the same age. The sow made no improvement after the small ones were weaned, but became emaciated and ultimately was killed. I made a *post-mortem* and found her to be tubercular. Not only did all her litter prove to be tubercular, but every pig which came into contact with this litter contracted the disease, and a fresh lot that were put into the sty that had been used by the sow, after she had been taken away and the sty had been empty for a period of two months, also contracted the disease and were badly affected. In all between 70 and 80 pigs were affected with tuberculosis through the introduction of this one, apparently healthy, animal.

A very marked *post-mortem* symptom in tuberculosis in pigs is a number of small marble-like nodules which are almost invariably found in the spleen. In the outbreak to which I have referred, we found the pigs affected in almost all the organs of the body; some were principally affected in the lungs, some in the liver, some in the mesenteric glands, but I think without exception all were affected in the spleen. In several other large outbreaks I have found similar conditions present.

Although tuberculosis is so very virulent amongst pigs, yet, taking the country through, there are not any very large number of animals affected, and in pigs the disease could at present be very easily held in check, and kept under proper control.

In Cattle.—In cattle, however, we find the case to be very different, and from the various statistics which are published, we must accept it as a fact that a very large proportion of animals have the disease in a more or less aggravated and chronic form.

Number of Cattle Affected.—In an article in *The Veterinary Record* of this year, signed "W.H.," we have an estimate of the number of animals that are diseased, and although I cannot agree with some of the conclusions that are drawn, or, perhaps, with some of the figures that are suggested, still, I have no doubt that it gives us a rough indication of the number of animals which are more or less affected. In this article, apparently based on the report of the Royal Commission, we are told that of the cattle in Great Britain over two years old, 20 per cent. are affected, while in the cattle under two years old, we have only 1 per cent. affected. Taking the number of cattle in Great Britain as reported by the Board of Agriculture as correct, we find that there are 4,000,000 over two years old, and 2,500,000 under two years old. Of these it is suggested that about 1 per cent. per annum show clinical symptoms of the disease, and are unfit for food. In the returns from Copenhagen, the percentage of animals over two years old, affected with tuberculosis, is given as 17 per cent., while in those from Berlin we have a percentage of 15 per cent.

Animal Loss.—In 1892 Professor Brown presented to the Board of Agriculture a report on this subject, and he there stated that of the cows that had been killed during the year by the Board, 22 per cent. were affected with tuberculosis, while of other cattle there is only a percentage of 15 per cent. These percentages have almost all been taken from records of animals slaughtered for the butcher, or from farms where the milking stock has largely predominated. As I have had rather exceptional opportunities of seeing farm stock in their natural condition on many farms in different parts of England, I know there are very many cases of young stock who dwindle and die as yearlings, which we never hear of professionally, and there are many others which we see but which either ultimately die or are killed and sold locally, and which do not figure in the statistics given. I should say the loss among young stock, though very much less than among older animals, is decidedly greater than the figures quoted would indicate.

If we say for the basis of calculation that 5 per cent. of the stock over two years old are affected, which I consider nearer the figure than 20 per cent., we get a total of 200,000 animals affected. If, again, we take the loss on the 200,000 as equal to 1 per cent. per annum we have a total of 20,000 animals, and a very fair and moderate value would be £10 a head. On this basis, without reckoning the loss on young stock, we get a total sum of £20,000 per annum as the loss to the farmers and country at large.

Whatever the actual number it is quite evident that the disease is very widely spread, and that there must be a very great annual loss, both to the owners of the animals and to the community owing to the existence of this disease.

Causes.

It becomes a very practical point to inquire why such a very large proportion of our herds are diseased, to ascertain as nearly as we can the chief cause or causes, and, if possible, to devise means to remove them.

Heredity.—Until very recently it was generally asserted that the principal influence or cause was heredity; at the present day it is quite as strongly asserted that heredity has little or nothing to do with the spread of the disease. To my mind, there is very little doubt that although heredity cannot be said to be the actual cause of the disease, yet it bears a very important influence on its propagation. Undoubtedly there are some families of animals whose tissues are constructed in such a way that they form a very favourable seed-ground for tuberculosis, and if any germs are about they will grow quickly and luxuriantly, the animal having little or no protective power in its own body. While, on the other hand, I have known members of other

families exposed to the same infection, and under the same conditions, able to resist the disease to a very marked extent.

Sire.—In heredity we have to consider what influence the sire possesses, and what influence we get from the dam. If the sire was tubercular, is there a likely prospect of his communicating the disease either to the dam or to the offspring? A careful examination of the evidence on this point leads us to believe that there is very little danger, if any, of the disease being communicated by the sire to either the dam or offspring. A tubercular bull might by licking or coughing on a cow, or by the ejection of bacilli in the seminal fluid, infect a cow, but our practical experience teaches us that such an event is highly improbable, and is not an important factor. I do not think it is possible for a bull to infect a calf at the period of service. The influence a sire has on the disease is the influence derived from the power of the protoplasmic spermatozoa to reproduce the particular form, colour, shape and peculiarities of tissues which the plasma of the sire may possess.

Dam.—It also seems that there is very little danger of the disease being communicated from the cow to the calf before it is born, and although I can quite conceive that where a cow is the subject of generalized and progressive tuberculosis, it is possible for the fœtus to become infected before birth, it must be at some period after the development of the ovum has commenced; and in any case it is an extremely rare occurrence.

The part which heredity plays in the propagation of this disease, seems to consist in the perpetuation of systems which favour the growth of this particular germ.

Geological Influence.—The geological conditions under which animals live have very little, if any, influence on the disease, and we find it amongst animals living on primary, secondary, and tertiary strata; as commonly on limestone as we do on sandstone, on clay as on chalk.

Climatic Influence.—Climate undoubtedly has a direct influence, and the more ozone and oxygen there is in the air, the less chance is there for the development of the tubercle germ; while we know that in mild cases there are particular districts where the air seems an almost specific cure for the disease—such, for example, as the Davos Platz and the Highlands of South Africa. But in no climate, as far as we know, can the disease be spontaneously produced.

Influence of Food.—There is no record extant of the food which an animal eats ever producing the disease (unless infected), and there is no evidence to suggest that it should. As an accessory cause or favouring circumstance food plays a large part, and animals fed on stimulating or forcing food, particularly such foods as brewers' grains, are rendered more susceptible to disease.

Contagion.—The great, in fact the only, means by which tuberculosis is spread is contagion, principally from the air which animals breathe, or from the food which they eat. If either of these are infected with the tubercle germs, tuberculosis may be set up in the animal which receives them. We find that it is not necessary for animals to be in direct contact to communicate the disease: they can also communicate it through mediate material.

Housing—In cattle that are tied up and kept in houses, neighbouring animals cough over the same food, push it backwards and forwards with their noses, and pass it from one to another. Undoubtedly this is one very common means of spreading the disease. Again, we find the same animals lying side by side, breathing into each others' faces, and this, too, might easily be a means of communicating the disease. In many cow-houses there is very little ventilation, and in most the air-space is totally inadequate, which causes the air to become loaded with carbonic acid and other injurious gases given off from the cattle, a state of atmosphere which

has a very lowering effect on the vitality of the tissues and induces them to become an easy prey to disease. Where tubercular cattle have been tied up in one stall for a number of years, the woodwork and the mangers and the walls become so thoroughly infected with the tubercle germ that healthy animals tied up in the same place months afterwards will contract the disease; another means which has been advanced as propagating the disease is contact with human beings, and there is no doubt that a considerable proportion of those men who are employed in stalls in which cows are kept all the year round are themselves tubercular, and it is only reasonable to suppose that in some cases these men may affect animals. To say that men affect any large number of animals I think is rather stretching a point, and I believe that the farm animals which are chiefly affected through human agency are either pigs or fowls.

Having admitted, then, the large number of animals that are affected, and that the disease is one which is practically only spread through contagion, though influenced by heredity, food, housing and climate, we have to consider whether there is any practical means by which the disease can either be eradicated or kept within much smaller limits, and a first step in this problem is to diagnose it.

Physical Symptoms.

Examining an animal physically, we know that we can only correctly diagnose a very small number of those that are actually affected, and this has been the great stumbling block to dealing with the disease in previous years. There are no absolutely diagnostic symptoms of tubercle in cattle. There are many symptoms which we usually find present in the various forms the disease assumes, but nearly all these symptoms may arise from some other existing cause, and by circumstantial evidence we have to balance between the most likely probability. In cattle we have acute and chronic forms of the disease, which may merge or change into each other. In the acute form the symptoms will vary with the organ or organs that are chiefly attacked, but there is always a high temperature, 105—107, with quick respirations and accelerated pulse beat. If the lungs are involved auscultation will reveal the parts affected, which very quickly become congested and prevent air passing to the smaller bronchi and vesicles. The abdominal respiratory movements are shallow, quick, and often double, while the elbows are markedly turned out. There is glistening and brilliancy of the eye, a dry nose, and disinclination for food. Death is the usual sequel within the course of a few weeks.

In the chronic form there is frequently no physical manifestation of the disease, and considerable areas of various organs may be affected for months or years without apparent inconvenience to the animal. In these chronic cases it is frequently noticed that other illnesses, such as difficulties during parturition or colds, are materially aggravated and are more difficult to subdue. In other chronic forms we find a gradual manifestation of symptoms dependent on the functions of the body which the tubercular growth interferes with. When the mesenteric glands are affected we find nutrition impaired, and the animal becomes thin and emaciated. Where the lungs are involved shortness of breath is generally a leading feature. By constant practice these symptoms become valuable aids to diagnosis, but there is not sufficient evidence in them to make the diagnosis certain.

Reliability of Tuberculin as a Test.

We have a comparatively new agent, tuberculin, which promises to enable us to diagnose the disease with comparative certainty. Among many people the results attained by using tuberculin are questioned and doubted, and it

becomes very important to prove whether tuberculin properly prepared is a reliable diagnostic agent.

Experiments.—Some four years ago I carried out a number of experiments with this object, and at the time published some of those experiments in *The Journal of Comparative Pathology and Therapeutics*, and I then tested some 30 to 40 cows, and I also tested several isolated cases of animals which I was enabled to kill after testing to see whether the tuberculin diagnosis was correct. I entered upon this work with a great deal of scepticism, and when I found some 30 per cent. of these cows reacting—cows which appeared in the very pink of condition—I thought the tuberculin test must be radically wrong. Among these cows was one which was particularly valued and which seemed to be particularly well. I watched all the cows that I had tested carefully. In this particular instance the cow which was valued was tested again at the end of six months, and re-acted to the test; she was turned away with some other cows for a few months in the winter. During this time she developed a cough and began to lose condition; she gradually got worse, and in spite of the usual remedies she ultimately died. On making a *post-mortem* the organs were found to be extensively diseased. In several other instances I was enabled to verify the tuberculin test by *post-mortem* examinations, and in every case the tuberculin test has proved correct. After first testing the herd I repeated the test at intervals of about six months. I was much struck by the fact that cows sharing a stall with a cow that reacted the first time reacted on the subsequent tests, and that nearly all the cows that reacted were more or less in groups. So convinced was I of the correctness of the test, and the very contagious nature of the disease, that reacting cows were isolated and slaughtered. Occasionally a cow that reacted at a first or second testing failed to respond to future tests. This apparent inconsistency of results has given rise to unjustifiable criticisms. I believe the results are correct. I believe that such cases often mean that a particular animal has been removal from the influence of contagion, that the natural powers of its body, often aided by external conditions, have asserted themselves, and thrown off the disease. In fact, it is a case of recovery. Although a herd may, by persevering care, be freed from tuberculosis, yet want of sufficient ventilation, a heated atmosphere, the purchase of fresh cows, and the infection in the building will, within six months, cause the disease to be as rife as though no precautions had been taken.

Reliability of Tuberculin.—It is very necessary, however, to be quite certain that the tuberculin is, itself, a correct and proper production, because during the experiments I have tried tuberculin from several different sources, and I found there was a considerable difference in the material supplied, but I believe that which is now supplied from the Pasteur Institute can be absolutely relied upon, and is of a standard strength.

Recently I tested three herds of about a hundred-and-fifty cows, the tuberculin came from the Pasteur Institute in one bulk. I used the same syringe, the same thermometer, and I injected the cows myself on succeeding nights. In one case I found about 40 per cent. of the animals affected, in the other instances no animal gave a reaction. In the first herd I know tuberculosis has existed in the sheds almost, if not quite, from the time they were built. The animals were kept in day and night, there is very little ventilation, and if you go into the cowsheds after the workmen have left of an evening they are exceedingly hot, close, and strong smelling. In the other instances, no case of tuberculosis has been known in the herd, the animals are turned out to grass a considerable portion of the year, and when you go into the cowsheds they smell as sweet and fresh as an ordinary barn or coach-house would. In the first case fresh cows are continually being purchased, in the others, the animals are bred on the farm. So that

independently of the tuberculin test, reasoning from clinical experience and statistical knowledge, we might have expected the percentage of reactions which I obtained. The temperature and position of the cows in the shed in the first case are very suggestive.

Objections.—Among the objections which have been raised to tuberculin are, first : it arouses the disease from a latent to an active form, and it causes the disease *de novo.* Practically I think we may say neither of these results are obtained ; at any rate, I have found no affirmative evidence. Another point which has been raised is whether tuberculin causes, in the animal in which it is injected, a certain amount of tolerance. This, I think, is undoubtedly the case, and an animal which has reacted to tuberculin may be injected again a few days afterwards without showing any reaction at all ; but this tolerance, as far as my experience goes, seems to be limited to from three weeks to a month. From a practical point of view, a knowledge of this tolerance is made use of to deceive inspectors. It is reported, however, that M. Nocard has prepared a fresh form of tuberculin which can be depended upon to give a reaction in animals that are affected even 24 hours after they have been subject to the ordinary test, and if this is correct, it is a very useful safeguard.

A much more weighty objection is the fact that the rise of temperature in reacting cows may take place at any period between the eighth and twenty-fourth hour after injection, and this involves the taking of temperatures every three hours. This means that if one or a hundred cows are tested, someone competent to use a thermometer must remain where the cow is or cows are to do this, and the testing becomes tedious, irksome, and expensive.

New Thermometer.—To overcome this difficulty I have invented a thermometer case which can be fixed into the vagina of a cow and which will remain there for 24 hours without in any way inconveniencing her. These are now being made by Messrs. Arnold and Son and will be purchasable from them. It may be suggested that although we get the maximum temperature in this way we are unable to see whether the rise is a gradual one or whether it suddenly rushes up during the first hour or last hour of the test, a fact which would lead us to suppose there was some other cause besides tuberculin operating. This I admit is so, but I contend that such cases are so rare as not to have an appreciable bearing on the point. By using this case a practitioner can inject a few cows at various farms during the day and next day drive round and take the thermometer out and register the temperature. This great saving of expense and labour ought to help us very materially in suppressing the disease.

Cows that are unwell or in very advanced stages of disease or any whose temperature are not normal should not be tested, or if they are, carefully re-tested a month later.

We can say, that although there may be a few errors in diagnosis, yet on the whole we can correctly diagnose tuberculosis in a sufficient number of cases for all practical purposes.

Reasons for Controlling. What then are the chief reasons for controlling the disease ? From our point of view we have an adequate reason in the great annual loss which the country is put to by the death, or partial disablement of such vast numbers of animals. Another reason, and one which with the general public would probably carry the greatest weight, is that these animals which are affected with tuberculosis are to a great extent animals which in some form or other are consumed by the general public, that either the milk or the meat from these cows finds its way into public use, and that experiments and experience have proved that it is quite possible to convey the disease in either the meat or the milk. Apparently much the greatest danger lies in the milk which is supplied from a tubercular herd. It is unnecessary

here to dwell on the evidence that has been amassed on these respective points. I fully agree with the finding of the Royal Commission contained in pars. 48 and 64, and on these I base my assertions.

Have we any means by which this disease can be eradicated or controlled, and, if not, can we create means which can practically carry out this desire? Any means which are adopted to deal with such a vast disease must be very expensive, but we have, on the other hand, to remember that there is an annual loss to the stockowners and to the productive power in this country estimated at something over £20,000 per annum. If we capitalise this sum at 3 per cent. we have a very large amount of money available to deal with the disease. At present I think it is generally admitted that there is no machinery in working order competent to take up this question, and that these and similar questions should be dealt with by properly constituted authority.

(*To be continued*).

(*Continued from page* 60.)

Another subject about which I should like to say a word or two is the theory enunciated by one of the veterinary surgeons of the Board of Agriculture, and by an executive officer of the Board, that rabies is spread and kept up by the ownerless cur. We have no evidence of the existence of such a class of dogs. I deny absolutely that there is such a class. No dog is long an ownerless cur in London. The poor people of London, and their children, reveal a marvellous liking for pets. As soon as a stray dog enters any little back street in London, you will see it immediately surrounded by children. Perhaps this accounts for the fact that a very large proportion of the cases of hydrophobia in the human subject occur among children. The children of the poor wear short petticoats and have bare legs, and are thus exposed to attack. There is another explanation. A stray dog is nearly sure to be collared by a child as soon as the child gets the opportunity. Sometimes it is the other way about, and the dog collars the child. Now, we are surrounded by the sea. As I have pointed out, rabies has appeared to the greatest extent in this island after wars abroad, after the passing of people to and from the European Continent. Not only after the wars, for I remember that some years ago Algiers suffered very severely. I remember that a dog was brought to me which a few weeks previously had been bitten by another dog in the streets in Algiers. At that time the French were making great efforts to stamp out the disease in Algiers. It has taken years to arouse our Board of Agriculture to the fact that the disease is imported here, and that once stamped out, unless effective regulations are enforced with regard to imported dogs, rabies will soon be imported again. I think it is a feather in the cap of the Board of Agriculture that it is now alive to the importance of this subject, and has directed that an Importation of Dogs Order shall be enforced on and from the 15th September next. If it is desired that a dog should be brought from abroad into this country, the owner must give notice to the authorities, supply his name and address, describe the place to which he intends to take the animal, and undertake to properly look after the dog, isolating it if necessary. Then if the dog be landed the owner obtains a license. Everything depends upon how the license is worded. It seems to me that if the license merely requires a dog to be tied up or put in a cage, the authorities may just as well prohibit the importation of dogs completely. I do not think the Board of Agriculture will do that, because when once the name and address of the owner and the

destination of the dog are ascertained, it will be an easy matter to specify on the license and to enforce conditions, one of which should be that the dog should wear a muzzle for three or four months, or whatever the time fixed might be, after its arrival in this country. Another condition should be that the owner should report the arrival of the dog to the local authorities when he reached home. Further, he should report any change of address up to, say, three months or whatever the time may be, and meanwhile the dog should be inspected once a month by the veterinary surgeon of the local authority. Those regulations seem to me to be quite ample to admit of the detection of any cases of rabies imported and to prevent the spread of the disease. They would, too, not interfere with the liberty of the subject—that much abused term—or with the importation of dogs. Now this Importation of Dogs Order does not apply to Ireland. It is a curious thing that that country seems to prevent the proper carrying out of any Contagious Diseases Act in Britain. You know that at the present time we have swine fever in Ireland and also swine fever here. Yet the Board of Agriculture have not the pluck to prohibit the importation of pigs into this country. They try to evade responsibility by introducing a so-called Temporary Swine Importation (Ireland) Order. The use of the word "temporary," I suppose, is a sop to the Irishmen. But it has been renewed every month during the last eighteen months or more What is the Order? It enables any country authority to prohibit the importation of swine from Ireland into any district under the authority's control. The only district into which the swine are imported is the port of landing. It is not at all likely that the authorities of any port which depends for its prosperity on its shipping trade, will interfere to prevent the importation of swine or their passage into the next county. I hold that it is even more important at the present time to apply an importation of dogs order to Ireland than to the European Continent. In Ireland there is nearly as much rabies returned as here, but I do not believe that half the cases are returned. If you look down the returns you will find these figures: Great Britain 672 dogs, 55 other animals; Ireland 263 dogs, and 95 other animals. I think the return as to dogs and other animals from Ireland is very disproportionate as compared with the returns for England. In England 12 dogs are required to infect one "other animal." In Ireland three dogs infect one "other animal." There are two possible explanations. One is that rabies in Ireland exists amongst the drovers' and shepherds' dogs to a large extent, and that the sheep are bitten in considerable numbers and make up the "other animals." Another explanation is that not one-fourth of the cases of rabies in dogs occurring in Ireland are reported at all. When so large a number of "other animals" is reported, it is perfectly evident that there must have been a great number of dog rabid to have bitten them. Assuming the existence of disease in this class of dogs, every cattle boat from Ireland brings dogs, the property of the drovers and shepherds in charge of the flocks and herds. These dogs accompany the cattle and sheep through the portal town to the market, and there is no knowing what harm they do. I think there is a great deal more in this than meets the eye, and that it is one of the factors that accounts for the prevalence of rabies in this country. Here (pointing to document) is a map, the darker part of which shows the larger number of cases of rabies. You will see that the darker part is round Liverpool, which has the largest import trade of animals from Ireland. Three years ago one of the worst infected parts of Great Britain was Glasgow and its surrounding suburbs. Glasgow is another port with a large import cattle trade with Ireland. Southampton once showed the same prominence in these maps. No doubt this is owing to the importation of rabies from the Continent. As a matter of fact, then, gentlemen, I am perfectly satisfied with the present regulation regarding rabies so far as it goes, but I think that now

we have an Importation from Abroad Order the next necessary thing is an Importation from Ireland Order; and, further, I think we should not wait until disease travels in a district, but that a muzzling order should be enforced on the appearance of any single case in any district.

Discussion.

Mr. HURNDALL said he had never approved of the system of muzzling as a means of suppression. And why? Because in the first place it involved great annoyance to the owners. But that, of course, would not hold water if there were not other reasons. He was not at all satisfied that muzzling had really been the means of suppression. Mr. Hunting described the use of the muzzle as a token and he (Mr. Hurndall) took it that that was all they required. They required a token to discriminate to whom dogs belonged—who were responsible for their care? Well, he considered that a token in the form of a label introduced into the dog's collar, bearing a number similar to that of the license, would be a far better means of recognising the ownership of a dog and tracing the responsible person who owned it than a muzzle that did not tell to whom the dog belonged, which could not be used without an immense amount of annoyance to the owners, and which also (especially since wire muzzles were insisted on) was an extremely annoying thing for the dog itself. He should rather say an extremely irritating thing for the dog. He should like to see this idea of a label adopted. He thought it would be more satisfactory inasmuch as it would more certainly answer the description of a token indicating to whom the dog belonged. The plan would also, he thought, very materially enhance the revenue of the country. At present he thought they would all admit that there was a very large number of dogs running about the country whose owners, notwithstanding the vigilance of the police, were not possessed of licenses. The police generally came to those who had licenses, and personally he had been pestered because when he went to Ealing it was found he had not taken out a license there, the fact being that he had procured a license previously in Kensington. If his suggestion were carried out in its integrity no dog could be owned without being licensed, and he was very sure the revenue of the country would be very largely increased. At the same time, the owner would not be annoyed nor the dog irritated. Then there was another point, as to where the muzzling order should be enforced. Mr. Hunting suggested that when the first case broke out, there should be a muzzling order extending over a ten-mile radius from the scene of the outbreak. If his (Mr. Hurndall's) plan were adopted, no such restriction, no such troublesome and annoying procedure, would be required, because the entire country would be covered by his regulation. If there was any merit in stamping out rabies or any other disease at all, which he did not for one minute believe—he was not a believer in stamping out—then he maintained if it were done at all, it should be done thoroughly and entirely all over the country. Mr. Hunting referred to the fact that a difficulty arose about certain dogs being exempted from those restrictions—such as a pack of foxhounds and other sporting dogs. Greyhounds were also mentioned. He assumed that all of them who were more particularly connected with sport knew that foxhounds were under restrictions; and they might have recently read that the hounds in the kennel of the Belvoir Hunt were to be subjected to the muzzling order, although there was never known to be a case of rabies in Leicestershire. If these suppressive measures were to be of any use, surely they should be applied to foxhounds. He was a sportsman and knew how annoying it would be if one class of sporting dogs were to be exempted from restrictions that were imposed upon another class. He had been a coursing man and knew that greyhounds were not exempted from these restrictive

measures. They were subjected to them save when coursing the hare. Greyhounds had to be taken from one place to another. Not so foxhounds and harriers. If his suggestion were adopted, every foxhound would carry a slight token round his neck without inconvenience. Some might say that the dog would incur the risk of being hung up in a hedge. That was a risk certainly, but the owners of foxhounds would only be placed on an equality with the owners of other dogs all over the country. He thought the results of the past showed that suppressive measures, as hitherto adopted, had proved unsatisfactory. They had to a certain extent, probably in London and other large centres, been the means of reducing the number of cases of rabies, because dogs that were either ownerless, or whose owners had allowed them to escape, had been seized and taken to the Dogs' Home, and he thought he was right in saying that a much larger number had been destroyed than sold. Poor people, when their dogs escaped, were not sufficiently loyal to their dogs to run the risk of being fined for having kept them without a license. It might be that there were not many really ownerless dogs seized in London.

Mr. F. W. DOWELL said that an idiot who wrote in *The Referee* under the name of "Dagonet," who wrote more twaddle perhaps than any other man on earth, stated that Mr. Long did not muzzle his sporting dogs. This was not the fact. "Dagonet" knew, or should know, that Mr. Long was not sticking up for the dogs of sporting men or anybody else. If the President of the Board of Agriculture thought it necessary to muzzle sporting dogs, he would doubtless muzzle them, but Mr. Long knew that every foxhound, after feeding, was passed through the doorway to his trencher, and his owner knew exactly the condition of every dog he had in his kennels. The foxhound was always under control. There was absolutely no danger with a pack of foxhounds. There could not possibly be an outbreak of rabies in a pack of foxhounds without the owner knowing it. The danger lies with the owner of a private dog. The private dog stole away, and his disappearance was not noticed for a time. No importance was attached to the event. The owner was indifferent. That was where the danger lay. In the case of a pack of foxhounds, the dogs did not need to be muzzled. They were kept under proper care and oversight.

Vet.-Major NUNN thought Mr. Hunting hardly laid stress enough upon the extension of the Importation Order to foreign countries. He did not mean by foreign countries merely the European continent, but countries still further afield. They must remember that with improved modern steam machinery the voyages between far distant countries had been greatly shortened in duration. The run across the Atlantic now occupied about six days, and that from Bombay twenty-one days. His experience of the East taught him that it was a hot-bed for rabies. During the last year he was in India he had 22 animals brought to him suffering from rabies. It must be borne in mind that in India the natives had a prejudice against killing animals, that they were more tender with animal life than we were at home. In the East there were whole packs of absolutely ownerless curs wandering about. The 22 dogs that were brought to him were so brought by more or less well-to-do persons who were sufficiently interested in them to seek his aid, but the proportion of rabies existing amongst the ownerless packs of curs and jackals that roamed the country was appalling to contemplate. It was curious, however, that the number of cases of hydrophobia returned by the Indian authorities was not so great, having regard to this fact. He accounted for the circumstance by the fact that the majority of cases of rabies in dogs certainly, and also in jackals in India, almost invariably assumed the form that was known as dumb rabies, with the jaw paralysed. Of the 22 cases brought to him one year only two of them were of the furious form of the disease. That was a significant fact.

His opinion was that the East was a much greater source of the importation of rabies than was usually suspected. Mr. Hunting mentioned that Southampton had shown an unenviable notoriety in the matter of outbreaks of rabies. A large number of cases had occurred in the neighbourhood of that seaport within the last two or three years. During that time the whole of the troop service from India had been run into Southampton. Troopers were allowed to bring home a certain number of dogs, which were generally curs of the poorer description. While in India these dogs were allowed to run about under no supervision. Was it not possible that the bringing over of these dogs might have some connection with the fact that Southampton had incurred this unenviable notoriety in the matter of rabies. Mr. Hunting had alluded to quarantine. It was enforced in relation to dogs both in Australia and at Malta. In the colony of Victoria the system of quarantine adopted was a modified form of license. The owner of the dog had to declare his name and address, and he received an order to hold the dog. But it was kept under supervision and was not allowed to run about absolutely loose. In New South Wales actual quarantine was enforced for six months, and at Malta for four months. Alluding to the two islands near each other, Réunion and the Mauritius, he said that while in the latter there was no restraint on the importation of dogs, in the former the restrictions were severe. While in Mauritius rabies was more or less prevalent, in Réunion the disease was unknown. At all events, such was the case at the time of which he was speaking.

IRISH CENTRAL VETERINARY ASSOCIATION.

A MEETING for the foundation of the above Association was held at Kelly's Hotel, Mullingar, on Thursday, July 22nd. David Fulton, Esq., M.R.C.V.S., presided. There was a very representative meeting of the veterinary profession, and after the routine business of electing an executive committee a discussion took place on the appointment of veterinary surgeons to horse shows, and the following resolution was unanimously passed:—"That the acceptance by veterinary surgeons of appointments from show committees under circumstances which render it possible for their opinion to be challenged and disputed by interested outsiders, is to be deprecated in the interests of the veterinary profession, and it is the opinion of this meeting that no veterinary surgeons should accept appointments under such conditions."

PRIZE DAY AT THE LAHORE VETERINARY COLLEGE.

THE annual distribution of prizes and certificates to the students of the Lahore Veterinary College took place on Saturday morning, April 17th. His Honour the Lieutenant-Governor presided, and there were also present Major Egerton (Private Secretary), Captain Annesley, A.D.C., Mr. L. W. Dane, C.S., Mr. M. F. O'Dwyer, C.S., Mr. M. W. Fenton, C.S., Mr. B. G. Wallis, Veterinary-Captain H. T. Pease (Principal), and Veterinary-Lieutenant H. A. Sullivan, etc., etc.

The Principal addressed the following remarks to His Honour the Lieutenant-Governor:—

Your Honour and Gentlemen,—I must, in the first place, in the name of the students and teachers, thank you for honouring us with your presence here to-day, and venture to hope that you will extend to the Institution the same interest which your predecessor, Sir Dennis Fitzpatrick, showed. This Institution has now been in existence for fifteen years, and during this time 417 men have graduated as veterinary assistants. The first Principal was

Veterinary-Lieutenant-Colonel Kettlewell, and following him Veterinary-Captain Nunn, both exceedingly able men who have had the best interests of the College at heart, at heart, and have made it the successful institution it is at the present day. Although I have only been appointed Principal for a short time, my own connection with the College commenced in 1888, when I was appointed as a Professor under Veterinary-Lieutenant-Colonel Kettlewell, a very fortunate circumstance for me, as I may say that this officer was one of whose talents as a veterinarian I have the greatest possible admiration, and it is to him chiefly that the institution owes the greater part of its success, the students turned out in his time now holding all the best appointments made in the districts. My own early recollections of the place are not very pleasant; there were scarcely any buildings up and the compound was a wilderness, looking more like a bare maidan than anything else, whilst the teaching was carried out under considerable difficulties. On Mr. Kettlewell leaving I had the pleasure of serving for some two years under the next Principal, Veterinary-Captain Nunn, C.I.E., who has so recently left us to take up more congenial employment at Home. To Veterinary-Captain Nunn the Institution owes much, especially in the way of buildings and equipment, and I think that it may now be said to be practically a completely equipped training school in all but one branch of veterinary science, but that one is, perhaps, the most important one of all. I refer to the subject of contagious and infectious diseases amongst animals, and I believe that I am right in saying that the greater part of the duties of the district veterinary assistants, and certainly one of the more important of those of military veterinary assistants, are connected with the prevention and suppression of contagious and infectious plagues amongst horses and cattle. When you hear, therefore, that it is absolutely impossible for us to deal practically with these diseases owing to there being no isolation wards, so that we are absolutely unable to show our student any cases of glanders, rinderpest, anthrax. surra, etc., it will be apparent that the education of the men in these, the most important maladies, leaves much to be desired. The general practice is good; over 2,000 horses and 1,500 cattle having been treated for various ailments during the year, and notwithstanding the above-mentioned drawbacks I think it may be safely said that the Lahore Veterinary College is the most thoroughly equipped and efficient in India, and turns out the best qualified veterinary assistants. I am able to speak with some authority on this subject, as I have had a good deal of experience of all the other schools, having been an examiner on behalf of the Government of India for the last two years. The graduates have so far easily obtained employment, and are in great demand in other countries. We have men employed in the Straits, Burma, and Aden, and during the year I have received an application for the services of five men for British East Africa. That the Institution has lost none of its popularity may be gathered from the fact that there were no less than 125 applications and candidates for the entrance examination, which was held on the 12th instant, there being only 20 vacancies. It is to be hoped that something will shortly be done to improve the management of the veterinary assistants who are employed in the districts, especially in the matter of supervision and direction, and that some steps will be taken to form them into a department, and regulate their pay, etc. There are at present over 70 men employed in the Punjab, but owing to the lack of supervision, a great deal of valuable power is lost, and there being no incentive to work well, the men are apt to get careless and slack. The results of the present year's examination are good; of 39 candidates who presented themselves for examination, only 11 failed to satisfy the examiners, who spoke well of the way they went about animals. I have only been in charge of the College since October, but since taking over, have been

able to make several important changes in the educational system. The most important of these is the division of the first and second year's classes—a separate course of lectures being given to each of these. This has, of course, greatly increased the work, and I must admit my indebtedness to Babu Prabhu Lall, the head clerk of the office, who has been entrusted with the work of translation of the whole of the course of lectures which are now being written on medicine, surgery, and lameness. These we are having lithographed and distributing to the students gratis as they are struck off. We have also commenced an *Urdu Vernacular Veterinary Journal* which is a great boon to veterinary assistants. In this work also I must cordially acknowledge the great assistance which is given by the teaching staff of the college and by the head clerk in the translation of articles and the correction of the proofs. These publications are a considerable expense to me, but they are so necessary that the work of preparing them can no longer be delayed. I am glad to be able to state that the journal is now a paying concern, and we hope to be able to reduce the price of it next year. In addition to the text books already mentioned, Dr. Amir Shah has translated Williams' "Veterinary Medicine and Surgery," the standard work in England. There is another matter which it gives me great pleasure to allude to, and that is the fact of an honorary title having been conferred on Said Mahtab Shah, one of the teachers in the college. This honour, the first conferred on a veterinary graduate, has given great satisfaction to the teachers and graduates of the College, and cannot fail to act as a healthy stimulus to others. And it gives us especial gratification that the first recipient of an honour should be a graduate of, as well as a teacher in, this Institution. I wish to record my acknowledgments for the very great assistance which has been given me by the whole of the teaching staff of the College since my appointment. Veterinary-Lieutenant Sullivan has relieved me of the greater part of the hospital work, and I can speak very highly of his attainments and zeal. The remainder of the teachers are old friends of mine whom I have known for the last nine years, and they have worked splendidly, without exception. I may specially mention Dr. Amir Shah, who has undertaken the duties of lecturer on materia medica, although not appointed to the post, and Said Sardar Shah, who has had charge of the dispensary, an extra duty for which he gets no pay. I will now ask Your Honour to hand the prizes and diplomas to the successful candidates who have gained them.

His Honour the Lieutenant-Governor, having presented the prizes and certificates, made the following speech:—I must first respond to the appeal your Principal has made to me to show the same interest in this institution as my predecessor. I very cordially respond to it. There are three reasons why I do so. The first is a reason of a general kind. We give a special name to those qualities which induce people to take an interest in and to attempt to alleviate the sufferings of the sick, the poor, and the miserable of the human race, and we may well accord a second place to those who are tender towards animals. I am sorry that circumstances seem to keep away from this institution a very considerable section of the community. These circumstances, I think, arise largely from misapprehension, and I have no doubt that in the end they will vanish. But I cannot conceive any more highly honourable and attractive career than one which sets itself to relieve the large amount of animal suffering in this and in every other province of India. The second reason is an economic one. The prosperity of this country depends largely upon those auxiliaries to agriculture, the horse and cattle, and it is extremely important that every possible means should be taken to preserve from disease the stock which is engaged in this extremely important occupation. Thirdly, I am bound, as the Lieutenant-Governor of this Province, to take an interest in your proceedings, because the career which

is offered by the course provided in this College—the honourable and useful career which is offered—is one which confers a great benefit upon the community in opening out the means of employment to a number of intelligent persons of the agricultural classes and otherwise, and setting before them and giving them a good object lesson on the possibility of doing honest work in a homely sphere. I notice in connection with the second reason for my showing interest in the college, that you have one great need, and that is a contagious hospital. The want of a contagious hospital is a most conspicuous point in the report which the Principal has given us of the year's operations. I can only say that I feel very deeply the need of this hospital, and that I shall be very glad always, subject to those reservations which a Lieutenant-Governor is bound to make in respect to funds, to further the wish which has been expressed by the Principal. It is matter of extreme importance, now that we hear of inoculation for rinderpest, and we ought most certainly to have here the means of testing the efficacy of such a measure and of promoting its introduction into the province if it should be found to be successful. With reference to the work of the College, I note with satisfaction that its popularity seems to be increasing, that there were 125 candidates for admission, out of whom it was only possible to provide for 20, including the scholarship-holders. Thus upwards of 100 students have had to be rejected, and it naturally occurs to one that it would be advisable in time to consider an extension of operations, so that a larger number may obtain an education or a training in this most useful branch of study. I am glad to observe that the proportion of passed students in the examination for veterinary assistants is good and maintains a high figure. Seventy of those who have gone up have obtained certificates. I recognise the advantage of separating the course of studies of the first and second order which has been carried out by the Principal and also of introducing a three years' course which will end I hope in the conferring of higher certificates, and the formation of a superior class of veterinary assistants who will supply a want which, I believe, is felt, for I see it is remarked that there is need of supervision of the assistants who have gone out to work in the provinces. The 78 assistants who are working in 29 districts are to a very large extent uncontrolled and unsupervised, and it is impossible for the present staff to do very much in that way with all the duties they have at headquarters. What is required in this matter is thorough organisation of the Department, so that efficiency may be obtained by proper supervision and control. That is a subject, also, to which I shall be very glad to give my attention if it is required. We have lost in Veterinary-Captain Nunn a Principal of rare merit. I had an opportunity of learning something of his indefatigable industry and devotion to his work nearly twenty years ago, and I know that he has done a great deal for this Institution. I believe that we have in our present Principal a master who will carry on that work to the full. I must notice this year the retirement of an old and valued friend in Dr. Rahim Khan, Khan Bahadur, and I take the opportunity of thanking him for all the assistance which he has given to this Institution. I am glad that a title of honour has been conferred on one of the staff, and I can only say that Government will always be ready to recognise honest effort in this department of work quite as much as in any other. I congratulate the successful students upon their attainments, and I cannot do better than repeat the advice which was given to them by Sir Dennis Fitzpatrick last year, and remind them that they have not attained to knowledge. They have learned something, but they have a great deal to learn, and they should endeavour by practice to prove that which they have acquired by theory, and to attain efficiency in their work, remembering also that they have to maintain the credit of the College, not only in regard to their proficiency in the line which they have adopted, but also in the higher

region of morals. They should show by their conduct, when they go out into the world, that they have profited by the discipline of this Institution, and that they are prepared to maintain its good name.

The following is a list of the prize winners :—

Medicine and Surgery.—1st prize, Abdulla, of Gujranwala; 2nd, Karam Elahi, of Sialkot; 3rd, Mustapha Khan, of Sowar.

Bovine Pathology.—1st, Wali Muhammad, of Umballa; 2nd, Abdulla, of Gujranwala; 3rd, Abdulla Khan, of 16th B. C.

Materia Medica and Chemistry.—1st, Tola Ram, of Rawalpindi; 2nd, Ali Muhammad, of Jullundur; 3rd, Muhammad Abdulla, of Gujrat.

Anatomy.—1st, Tola Ram, of Rawalpindi; 2nd, Abdulla, of Gujranwala; 3rd, Ganda Singh, of 2nd Punjab Cavalry.

Principal's Gold Medal for General Proficiency.—Abdulla, of Gujranwala.

Kettlewell Memorial Medal for Medicine.—Abdulla, of Gujranwala.

Kettlewell Memorial Medal for Surgery.—Abdulla, of Gujranwala.

His Honour the Lieutenant-Governor, accompanied by the Principal and the European guests, afterwards visited the various parts of the College.

CONTAGIOUS DISEASES ANIMALS ACT, 1894 and 1896.

SUMMARY OF RETURNS OF OUTBREAKS, for the four weeks ending July 17th, 1897.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders. (including Farcy).	Rabies.	Anthrax.	Sheep-Scab (for month of June.)
Outbreaks 1 Cattle found diseased 4 Slaughtered 88	Outbreaks 153 Slaughtered 2,535	Outbreaks 73 Attacked 104	Dogs 12 Other Animals 2 Destroyed 17	Outbreaks 34 Attacked 59	Outbreaks 20

SCOTLAND.

None	Outbreaks 11 Slaughtered 296	Outbreaks 5 Attacked 12	Dogs 1 Other Animals None Destroyed None	Outbreaks 4 Attacked 5	Outbreaks 7

IRELAND (for the four weeks ending 10th July).

None	Outbreaks 57 Slaughtered 440	None	Dogs Other Animals 30 8 Destroyed 36	None	None

CONFERENCE OF MINISTERS OF AGRICULTURE.

SYDNEY, May 14th.

THE conference between the Ministers of Agriculture of the various Australian colonies was opened to-day at the Colonial Secretary's office. The delegates present were the Hon. Sydney Smith, New South Wales; the Hon. J. W. Taverner, Victoria; the Hon. A. J. Thynne, Queensland; and the Hon. Dr. Cockburn, South Australia. The proceedings were held in camera.

The Minister of Agriculture of New South Wales was appointed president of the conference, and he made a brief statement of the objects with which the conference would be asked to deal, laying special stress upon the departments of the different colonies coming to some definite understanding concerning the tick pest, in regard to which there had been demands made in Queensland for a relaxation of the quarantine regulations. Among other matters of great public importance which the conference would have to consider was the conditions under which manufactured products should be exported to England so as to guarantee their uniform excellence, and the adoption of some system by which the export of grapes from districts infected with phylloxera should be controlled, so as to limit the chance of the spread of the disease, as well as the consideration of the question of the colonies taking action conjointly in the importation of phylloxera resisting stocks.

The conference at once plunged into a discussion on the tick disease, and Mr. Thynne, at some length, furnished information as to the course his Government had pursued in carrying out the agreement made at the previous conference for the establishment of a quarantine line, so as to completely isolate the infected districts from the clean parts of the colony. He also represented to the conference that there were a large number of graziers in the Central districts of his colony who had suffered severely from the effects of the drought, and who were most anxious that the loss with which they were threatened should be limited by their being able to send their cattle, whenever they were in acknowledged clean districts, south of the quarantine line.

The question generally was then discussed from the standpoint of the effect that such concession might have upon the herds of the rest of Australia, and a partial decision was come to. The members of the conference, however, refuse to disclose its nature, as they say that the matter will come up again for consideration at to-morrow's sitting.

The conditions under which the export of produce were now made came under review, special attention being devoted to the possibility of securing a reduction in freights to Europe. In this connection also the conference debated the desirableness of taking action to have exports of colonial manufactured products graded and inspected by State officials under a system to be made uniform throughout the colonies. The further consideration of this subject, and that of establishing a Federal Institute, which is strongly favoured by the Queensland Government, will be resumed to-morrow, to which day the conference has been adjourned.

MR. HUISH has just published "The Progressive Temperature Chart" for veterinary practitioners, showing the internal temperature, during health, of horses, domestic animals, camels, elephants, etc., in degrees Fahr. and Centigrade, with chart for recording temperature, respiration, and pulse-tracing. They are sold at the moderate price of 2s. per 100.

HOW THE ARMY VETERINARY DEPARTMENT MIGHT BE FURTHER UTILISED.

In these days, when plague, famine, and a depreciated currency are depleting the Government coffers, it behoves the financial authorities to set their house in order, and, where it is found possible, to retrench, either by judicious pruning or by a change in system. As long as inefficiency is not produced, the retrenchment or change should be carried out without regard to considerations of mere sentiment or precedent. There are two departments in the army where a change in system would result in a considerable saving without loss of efficiency. These are the Transport Branch of the Commissariat and the Department of Army Remount Operations. In the former the pecuniary loss from disease and injury of a preventible nature is extremely heavy, while the money often wasted in the purchase of unsound and unsuitable animals would be found, if summed up annually, a very startling amount.

To increase the strength of the Army Veterinary Department, or to estabiish an Indian one, to enable the transport at all times to have professional assistance, would be a costly undertaking, which it is not to be expected that Government would contemplate for a moment. But there is no reason, because a man is a veterinary surgeon, that he should be unable to perform other work, particularly when it is of a nature not requiring a special military training. If the Commissariat Transport were thrown open to veterinary officers it would be an enormous step towards efficiency, combined with economy. It would, of course, be injudicious to officer the whole Department in this way, but 25 per cent. of professional men would prove a valuable addition. Those wishing to join would have to pass the vernacular and the necessary examinations; for the first five years they would be seconded as holding staff appointments, after which they would have to elect for continuous Indian service, as the Royal Engineers do. A little consideration demonstrates how useful they would prove. Their chief duties would be the charge of the Transport Lines, purchase and hire of animals, the treatment of the sick and injured, the instruction of transport classes, the supervision of dairies, the charge of Government cattle-breeding establishments and grass farms, and the inspection of slaughter animals, before and after death. These matters are now left to officers, who, though undoubtedly doing their best, have not the necessary knowledge to guide them.

Turning now to the Department of Army Remount Operations, we find they have recently obtained the services of two veterinary officers in addition to those they had previously. No doubt they were required, as no matter how experienced superintendents of depôts may be, diseases and injuries, which, not being experts, they are unable to cope with, must occur. But although they are not able to perform the work of a veterinary surgeon, there is no reason why the latter could not perfectly well perform the duties of the superintendents, and thus in most, if not in all, the depôts, the one man would suffice where two are now employed, thus decreasing outlay by half without at all impairing efficiency. That objections would be raised goes without saying; the appointment of medical officers to the charge of jails, for instance, met with a storm of opposition, but it is an accomplished fact, and is found to answer remarkably well. One valid drawback can be shown to the foregoing proposal. That is, that those who have to use the horses, *i.e.*, British mounted troops, should have something to say to their selection. This sentiment is only natural, but at present, with the exception of the Remount Agent at Calcutta, the whole Department is officered from the Staff Corps by men, few of whom have ever served in British cavalry or artillery, and whose knowledge of the stamp of horses required must be, at the best, purely theoretical. By all means allow remounts to be purchased by combatant officers, but they should

be selected men from the branches of the service for which they buy, and might be appointed specially during the purchasing season, returning to their regiments and batteries for the remainder of the year. If these changes were carried out, a considerable saving, without loss of efficiency, would accrue. The Army Veterinary Department would obtain more scope for its ambitious spirits, who would see before them some tangible reward for professional skill and zeal, and a considerable number of Staff Corps officers would be released from employments for which their training does not suit them.—*The Civil and Military Gazette.*

RINDERPEST IN INDIA.

Professor Koch's visit to the East has been taken advantage of by the Government of India in a most thorough manner. Professor Koch volunteered to demonstrate to anyone his process of preventive inoculation against Rinderpest, providing an outbreak of that disease and a laboratory were procurable; there was no difficulty in either case. Professors Koch and Pfeiffer, with Dr. Lingard, the Imperial Bacteriologist to the Government of India, and accompanied by Veterinary-Captain Pease, Principal Lahore Veterinary School, at once proceeded to an outbreak near Fyzabad, identified Indian rinderpest with that found in South Africa, procured bile and blood from an animal dead of rinderpest, and immediately took it to Dr. Lingard's Laboratory and Muktasar in the Himalayas. They were here joined by Veterinary-Captain Haggar, Principal Agmere Veterinary School; Veterinary-Captain Raymond, Principal Calcutta Veterinary School; Veterinary-Captain Evans, Superintendent Burmah Civil Veterinary Department; and Veterinary-Lieutenant Baldrey, Assistant Principal Bombay Veterinary College, who had been deputed by their respective Governments to consult with Professor Koch on the question of Preventive Inoculation of Rinderpest.

The system of procuring and inoculating with bile, which is now well-known, was demonstrated to these officers, who will possibly be able to prove the utility or otherwise of the system, they having, unfortunately, very large experience of the disease in their respective districts. The Government of India is to be congratulated on having so promptly recognised the expediency of giving the above officers the advantage of a personal demonstration from the scientific discoverer himself. Professors Koch and Pfeiffer left Muktasar for Bombay on the 15th June, 1897. (Communicated.)

DEATH FROM GLANDERS.

Extraordinary Evidence.

On Thursday afternoon, July 22nd, at the Fulham Union Infirmary, Mr. Luxmore Drew, the West London Coroner, held an inquest on the body of James Thomas Lawrence, aged 35 years, a horse-keeper, lately residing at 28, Ewald Road, Fulham, who died in the Infirmary from glanders.

Mr. Spencer watched the case on behalf of the London County Council, and Mr. E. W. Pheasant represented Mr. Taylor, the employer of the deceased. Mr. Francis Ridler, the veterinary surgeon to the London County Council, was also in Court.

Rebecca Lawrence, of 28, Ewald Road, the widow, identified the body of her husband, who was a horse-keeper, and had been used to horses all his life. He never had a day's illness until a fortnight the previous Saturday

July 3rd, when he complained of a ladder having slipped at the railway arch stables, and that he had fallen and hurt his side. The next day he went to the hospital, and they bandaged him up and told him to come again. There was a scratch on his forehead. On Monday he went to work for a little while and did some lime-washing, but had to return home again. On Thursday, as he had got worse, they would have taken him into the hospital, but, not having a spare bed, he went to the Infirmary. At that time he was complaining of pain in his head and could not sleep. He said that he had been doing lime-washing, as some of the horses had died from glanders.

By Mr. Pheasant: She did not know he had been discharged earlier in the day on which the ladder slipped. He had told her it was dangerous to meddle with horses which had glanders.

John Smith, a horse-keeper, of 4, Starr Road, Fulham, in the employ of Mr. Taylor, of the Laundry Road and the Railway Arches, New King's Road, Fulham, said 18 horses were kept at the latter stables. Personally he had never known of cases of illness or death. The deceased worked on the same premises, and looked after eight of the horses. Witness saw him fall as he was coming down the ladder from the loft. The ladder slipped. It was a pure accident. The next day he said his ribs were broken, and on the Tuesday and Wednesday afternoon following, he did a little lime-washing. That was not because of infection, but because it was a regular practice. The horses had not been changed as far as he knew. The deceased only complained of pain in the head, and did not mention glanders. Another man who had had charge of the same horses was not ill.

By Mr. Pheasant: He heard that there were glanders in his own stable, but deceased would never go there; it was in a separate railway arch.

William Brockway deposed that he was foreman to Mr. Taylor, and the first he knew of glanders was a fortnight ago, at the Laundry Road stables, and which Mr. Ridler had removed. There was also a case at the Railway Arches a week ago. Smith was in charge of that horse, and was there when it died. Witness knew it was a case of glanders, and told Mr. Taylor, who sent for Mr. Ridler. Lawrence might sometimes have had to clean this horse, which was first taken ill about four days after the deceased met with the accident. He was sure deceased was not there doing lime-washing until after that horse had been removed.

By Mr. Spencer: Four horses were taken from the arches the same day—he thought it was Thursday. Lawrence was at work on the Wednesday and Thursday, or Thursday and Friday. In deceased's arch none of the horses were glandered, and deceased would have no necessity to go into the other arch. The lime-washing was not to disinfect and cleanse the glandered stables. Smith was in charge of the horses when they were ill.

By Mr. Pheasant: One horse died on July 3rd from inflammation, and Harrison and Barber removed it. Witness had given the deceased notice the day he fell down, but afterwards re-engaged him to do some lime-washing.

Smith—recalled—still adhered to his evidence that he did not know of the glanders, and certainly was not present when one of the horses died.

Mr. Alfred Edmund Taylor, cab and omnibus proprietor, of the Laundry Road, said he had about 100 horses, some of which were kept at the Railway Arches. Witness was away from London, but on returning three weeks ago, saw they had glanders, and sent for the inspector. Altogether 13 horses were destroyed. Witness had no idea where the glanders started. Witness did not know what horses deceased had charge of, but it did not appear until after he had been discharged. The lime-washing was done periodically and not because of any infection. Since then he had heard that deceased did some of the work.

By Mr. Spencer: The County Council supplied him, through the police, about two years ago, with a placard describing the symptoms of glanders, and cautioning the men as to the dangers. Witness was then at Starr Road, Fulham, and he hung the placard up in the stable-room. Since he moved, he had not given the men any caution. On his return on July 6th, he saw two horses wrong, and on 7th July Mr. Ridler condemned three horses; on July 10th he found one horse at Laundry Road and four at the Arches affected, and they were destroyed, as were also three on July 13th, and one on July 15th and 17th.

By Mr. Pheasant: Glanders might have existed for months without his knowing it.

Francis Ridler stated that he was a Member of the Royal College of Veterinary Surgeons, and held an appointment under the London County Council under the Contagious Diseases Act. On July 7th he received notice from Mr. Taylor and condemned three horses at Laundry Road. On July 10th he went to the Railway Arches and condemned four horses there. He could trace no connection between the two stables. On July 13th he condemned three horses, and on 15th and 17th one each day. The stables were clean, in good condition, and properly whitewashed. He gave directions for disinfecting. Glanders might be conveyed from mucous membrane to mucous membrane, or through an abrasion. It was possible to inoculate through a cut. A man might be inoculated during the stage of incubation and before the external indications appeared.

By Mr. Spencer: From the appearance of the first horse he saw the outward signs must have been there a week, and anyone conversant with horses would have noticed it. The first horse he saw at the railway arch was a very acute case, and the symptoms existed and were probably manifest on July 3rd. A horse might be glandered for some time without any visible signs or latent appearances. Several of the horses were inoculated with mallein, and they answered to the test and were slaughtered. He thought Mr. Taylor took every reasonable care to keep his stable clean.

Dr. William Steer stated that he was medical superintendent at the Fulham Infirmary. Deceased was admitted on July 9th. His temperature was high, but not till the day before his death did he diagnose glanders. He did not see a cut on the head. There were no external signs of blood poisoning. On July 15th his forehead began to swell with pus underneath. On July 16th he was put under chloroform, and the forehead was incised and the matter let out. It was cellulitis, and there were pustules showing under the skin. This was due to local infection, and not to any abrasion. On July 18th the temperature reached 106°, and he was delirious. That day he diagnosed glanders. He came to that conclusion because he had heard a history of glanders at a stable and there was a crop of pustules—certainly not small-pox—on the forehead and pustules on the elbows and legs (inner side) with discharge from the nose. His colleagues were of the same opinion. Death took place on July 19th at 8 a.m. Witness made a *post-mortem* 34 hours after death. The body was well nourished, with no mark of injury except the mark of the recent operation. There was no sign of any previous injury. The brain was normal. There was pus under the scalp extending back from the incision made. There was no congestion of the meninges. The heart showed signs of syncope, and the pericardium was normal. Both lungs were congested, recent and passive. The mucous membrane of the air passages were congested and granular. Just beneath the pleura and in the surface of the lungs he found several caseous nodules and deposits—known as farcy buds. These were very characteristic of glanders. At the bend of the elbow and legs were farcy buds. The septum of the nose was also ulcerated. In the liver and spleen were also deposits. The stomach was

normal and the kidneys congested. The bronchial and sub-maxillary glands were enlarged. Death was due to exhaustion consequent on pyæmia following glanders. He could not say the manner of inoculation. The appearance was from five to ten days after the inoculation. There was a fracture of the seventh rib but that was unconnected with the death, and the pyæmia was unconnected with that.

This being the whole of the evidence,

The jury returned a verdict that the death was due to exhaustion consequent on pyæmia following glanders conveyed to him by some horses in the stables in which he was employed; and that the cause of the said death was accidental but at the same time there was no evidence to show the exact introduction of the virus.

THE GROUNDWORK OF THERAPEUTICS.

At the last meeting of the Birmingham and Midland Counties Branch of the British Medical Association, the President, Dr. Robert Saundby, delivered an address on "The Groundwork of Therapeutics." Having traced the gradual development of therapeutics, he stated that the two essentials for the cure of disease were (1) the knowledge of the cause of disease, and (2) access to the proper agents for removal. Failure to obtain the knowledge had, he said, caused the search for the agents for removal to be for so many years a haphazard proceeding. Although they had learnt pretty thoroughly the structure and functions of the human body, and the changes in it caused by disease, although a great store of information had been acquired respecting the constitution and action of drugs, yet for want of the first essential condition of success the evolution of scientific therapeutics had been impossible. Successive theories of disease had been started, pursued for a time, and then abandoned as false or inadequate. But in their own time he believed that by the immortal labours of Pasteur the true solution of the problem had been rendered possible. Pasteur and his followers had proved that many infectious diseases were caused by minute parasitic organisms, and that the phenomena of those diseases—the fever, rapid pulse, nervous prostration, etc.—were the effect of poisons generated in the body by the parasites in the course of their growth and multiplication; further, that what they called organic diseases were for the most part the results of the reaction of the tissues to those same poisons. Reasoning by analogy, they believed that all infectious processes would, sooner or later, be proved to be due to the same causes. It must be admitted that the attempts to destroy pathogenic organisms after they had gained access to the interior of the body, by the administration of so-called antiseptic drugs, had ended in failure. Pasteur's object in studying the causes of diseases was to discover a remedy for them, and his genius enabled him to seize upon a fact in the life-history of those organisms which afforded a clue. When a microbe was grown in a suitable medium outside the human body, it inevitably happened that sooner or later its growth stopped, and its vitality seemed suspended; but if transferred to a fresh supply of the medium it revived, and renewed the cycle of its existence, which in turn terminated in the same way. Careful investigation of this phenomenon showed that it did not depend upon the exhaustion of the material necessary for nutrition, but upon the presence of some new substance or substances produced by the microbe and resulting from its vital activity. Apparently whenever pathogenic organisms were grown in suitable media inside the body, a material was formed which limited the activity of the parasite. That material afforded more or less pro-

tection to the host for a longer or shorter time against fresh attacks, and might in some cases be used to protect other individuals if introduced into their bodies. Pasteur regarded this material as at once the cause of disease and its cure; but further research had revealed that the vital products of those parasites were more complex. They consisted, first, of a poison or toxin which produced the phenomena called disease; secondly, of a substance called the alexin, which in some cases merely deprived the parasite of its activity, while in others it became actually destructive to it; and, thirdly, of an antitoxin which neutralised the action of the disease-producing toxin, but did not affect or injure the parasite. The last two were generally spoken of collectively as "anti-toxins." The second of those products was that which conferred immunity or prevented the growth and development of the invading parasite; the third was curative, and if used in time prevented the phenomena of disease. The problem at present was how to obtain those antitoxins in sufficient quantity and separated from poisonous allied substances. Having reviewed the different efforts to solve the problem, the doctor went on to say that they must also recognise that the remedies could not afford an infallible cure for all cases. Their effects must depend upon (1) the stage of the disease, (2) the virulence of the morbid process, (3) the presence of complications. It was only in the early stages of disease, before a fatal quantity of toxin had been secreted, that any real benefits could be derived from remedies which killed the bacillus or antagonised the toxin. The attitude towards these researches should be one of appreciative attention, for they might be well assured that never before in the history of the world had there been so hopeful a prospect of solving the great problem of the prevention and cure of infectious disease. In conclusion, he asked the members to bear in mind that progress in therapeutics depended primarily, not on their knowledge of remedies, but upon their acquaintance with the nature and causes of disease and their ability to differentiate its various forms. It was by the advance of knowledge along these lines that to-day they dared hope that they stood within measurable distance of the solution of the problem which had baffled the wit of man since first he knew the meaning of disease and death.

INOCULATION FOR TICK FEVER.

In a recent interview with a representative of the Rockhampton *Record*, Mr. C. J. Pound, Government Bacteriologist, supplied the following important information concerning recent experiments :—

A Unique Experiment.

Asked to supply information as to the Mundoolan experiments, Mr. Pound said that six months ago two steers from Inkermann station, in North Queensland, were dipped, cleansed, and shipped to Brisbane. There, while under his charge, they had entirely recovered, and become quite free from both ticks and tick fever. About four months after their arrival he had taken blood from these steers and injected it into two calves at Indooroopilly, both of which afterwards suffered from very slight fever, so slight, indeed, that it could only be detected by taking their temperature with the clinical thermometer. The results were noted day by day, the temperature being taken twice daily. It was found that the maximum temperature occurred on the fourteenth day, after which it gradually declined to normal on the twenty-first day. This test showed the importance of the clinical examination, as cattle

were often suffering from fever long before it could be detected by the eye, or by any change in their habits or appearance. Hence the conclusion that, without the aid of the clinical thermometer, and the most careful and regular observation of cattle under close supervision, experiments must be comparatively valueless.

No Poison in Blood of Tick-Fever Cattle.

Did you make any further experiments with the calves, Mr. Pound?

Yes, and what I conceive to be a most important one. We took one of the inoculated calves and one of the Inkermann steers to Mr. Collins's Mundoolan station, on the Logan River. There forty-one cattle of from two to three years of age, and all in good condition and perfectly healthy, had been made available to work upon. Of these, thirty were inoculated with varying doses of blood from the Inkermann steer—that is, from the maximum of 8 c.c.m to 1 c.i.m.—in different parts of the various animals, one, for example, in the jugular vein, another in the tail, and another behind the shoulder. The doses, as already said, were varied in every case, and each animal being branded with a number, careful records were made of temperature morning and evening, and of other symptoms. Then five head of cattle were inoculated with blood from the calf which had, as already stated, been previously inoculated from the steer. The remaining six were inoculated with blood from the steer after passing the serum through the Pasteur filter—the object in filtering being to absolutely exclude all germs, and inject the poison (so-called) minus the germs. The result of the experiment was that there was apparently no poison in the blood, and that inoculation with Pasteurised serum from a diseased animal would yield no result, in consequence of the mechanical breaking-down of the blood-cells by filtering.

Details of the Great Experiment.

Invited to specify precisely how his experiment at Mundoolan was carried out, Mr. Pound said that he made a clinical examination of the temperature of each animal every morning and evening, and recorded the result in detail in the book (produced). On examination, our representative found that a folio was devoted to each of the forty-one animals, every one having its own specific number, with the "dose" injected, the part of the body into which the injection was made, and the temperature recorded with the utmost exactness every morning and evening during the continuance of the fever—three weeks. Mr. Pound here remarked that too much care could not be taken in the use of the thermometer. For example, if the cattle were rushed into the yard or agitated in any way, the value of the test would be impaired by the excess of animal heat thus created. Then the time occupied in testing the temperature of forty-one animals twice a day was considerable. The thermometer had to remain in the rectum of each beast for three minutes, and there was, of course, time lost in going from one beast to another, and in making the careful record. He had been greatly impressed with the importance of the utmost exactitude in this matter, because if the test were in any way imperfect, or the record inexact, the basis of the conclusions yielded by the experiment was of little value. He had found great difficulty in ascertaing the true value of experiments made on cattle in America and elsewhere, by reason of the want of detail in the records. In fact, so far as he could ascertain, no experiments had been made elsewhere with the care and minuteness with which he had striven to conduct the experiments at Mundoolan. By permission of Mr. Pound we reproduce a folio of his record book, showing a typical case, as follows :—

No. 14.

Temperatures (night and morning) for three weeks of a two-year-old steer which had been inoculated in the jugular vein with 5 c.c. of blood taken from a healthy animal which six months previously had been tick infested:

Days.	Morning.	Evening.
1	104	—
2	101·6	—
3	102	102·8
4	102	103
5	101·6	101·8
6	101·8	102·1
7	101·2	102·8
8	102·2	103
9	102·4	103·1
10	103	104·1
11	104·2	103·3
12	104·4	104·8
13	105·5	106·6
(Micro-organisms very numerous in the blood.)		
14	106·6	105·5
15	104·6	104·7
16	103·4	103·5
17	—	102·2
18	100·9	101·2
19	100·6	101·2
20	101·3	101·3
21	101·2	101·4

22 animal eating and drinking freely and completely recovered from fever.

(It will be noticed that from the 14th day there was a continuous decline in temperature, until on the 18th day it became sub-normal.)

Results of the Experiment.

As to the results of the Mundoolan experiment after the fever had subsided, Mr. Pound said:—

(1) The six beasts inoculated with the Pasteur-filtered serum showed no change in temperature throughout the experiments. In other words, they remained perfectly healthy.

(2) Six beasts inoculated with serum from either the steer or the calf had slight fever, as indicated by the thermometer, but so slight as to be not otherwise observable.

(3) Twenty-nine beasts, inoculated with serum as in the last case, all had distinct tick fever as shown by the thermometer, but only a few so as to be visible to the eye.

(4) Several had redwater, or, rather, blackwater.

Tick Fever without Ticks.

The experiment, therefore, showed that blood from animals that had suffered and recovered from tick fever—in the case of the calf produced secondarily by inoculation without the presence of ticks—had produced in a number of previously healthy stock the typical disease of tick fever in the

absence of ticks. Moreover, the steers from which the blood serum was taken had recovered six months before the blood was so taken. This proves that the germ once impregnated in the blood of a bovine animal has its permanent home there, and that such blood in a certain percentage of cases is capable of reproducing the disease. Of course there are in every herd insusceptible cattle which escape tick fever when the tick is present, and also are not susceptible when it is absent. He could not explain why some cattle are insusceptible, and could only speak of the facts which had come under his own observation. Of the Mundoolan cattle which were in high fever (continued Mr. Pound) four died, but the rest all recovered, although some of them were very emaciated, but when he last saw them they were able to ruminate, and evidently were picking up condition. He added that this was, he believed, the largest experiment ever made—that is, with the greatest number of beasts—anywhere, not excluding America, and he considered the results highly gratifying and reassuring. When here twelve months ago with Mr. Bruce, the New South Wales Chief Inspector of Stock, he advised inoculation as a practical means of protection against tick fever.

Fever Producible by a Single Tick.

Another important fact in connection with the experiment is that the first beast to die at Mundoolan was one that had been inoculated with the minimum quantity of blood (1 c.c.) from the Inkermann steer. From this and other observations, he had concluded that a single tick getting on a bullock might produce tick fever, with red-water, the consequence of the fever.

Post-mortem Appearance of the Inoculated Animal.

Asked to describe the *post-mortem* appearance of the cattle that died under the Mundoolan experiment, Mr. Pound said that they were all typical cases. The organs of one animal presented the following appearance:—Urine in bladder dark and claret-coloured; kidneys almost black; spleen three times the normal size; spleen, on being cut into, had the appearance of black currant jam; liver considerably enlarged, and of a yellow hue; and gall bladder distended, with dark greenish-brown granular contents. There was very little blood in the veins, although the animal had been in splendid condition. After death its flesh presented the anæmic appearance of young veal.

Accurate Diagnosis possible.

Further, continued Mr. Pound, on the fourteenth day after inoculation at Mundoolan, and when only a few showed symptoms of fever, the blood of every animal was microscopically examined. In every case, except those inoculated with the filtered serum, the micro-organisms of tick fever were found in the blood. So that, without knowing the history of the animals, he (Mr. Pound) was able to state, as the result of microscopical examinations, the exact state of the disease when the blood was taken, and to determine whether the attack was in (1) the preliminary, (2) the acute, or (3) the convalescent stage. He could also determine whether or not any beast would recover from the attack.

To which our representative observed that he presumed this knowledge would be useful as enabling a stockowner to isolate and destroy the animals which were shown to be beyond recovery.

Special Immunity of the Inoculated Calf.

But, continued Mr. Pound, the Mundoolan experiment was of special value in another respect. The first animal that died (before referred to) was a cow

in calf. On examination it was found that the blood of the fœtal calf—which was not more than twelve inches in size from nose to tail—contained micro-organisms of tick fever in large numbers. From this he thought it might be assumed that the organisms are transmitted to the embryo before birth, and that the young animal becomes immune. This feature of the experiment is very important as indicating that the means may thus be provided of inoculating the progeny of healthy cattle in places outside tick-infested areas. He thought that his experiment indicated why, speaking generally, calves born in tick-infested country would be immune from the disease. And as cattle were less susceptible in early life, he thought that by inoculating calves with serum containing the micro-organism they would be rendered practically immune. Not so with the adult animal, however. An adult beast might have tick fever twice and recover, and have it a third time and die. It had been said that calves, as well as their mothers, had died from tick fever, but he thought that the calves had died from starvation, and in this opinion he was supported by some practical men.

Agreement with American Experience.

The result of this experiment with the blood of the Inkermann steer, continued Mr. Pound, is a confirmation of what had been done at Washington. There a cow was brought from the tick-infected district of South Carolina six years ago, and had recovered from the fever. But it has been found that the micro-organism is still in her blood, and that Texas fever can always be produced in another bovine animal by taking a little blood from the cow and injecting it into a susceptible animal.

Then, said our representative, I understand the ascertained result of the Mundoolan experiment to be, as far as it goes, that tick fever may be produced without ticks, and that young calves may be rendered immune by inoculation with the blood of such animals. Also, that animals so rendered immune will transmit such immunity to their progeny. But is there no danger of contagion from such animals if placed among healthy stock ?

No, replied Mr. Pound, the cattle in which I produced tick fever at Mundoolan were running with the dairy cattle at the station at the time. There is no fear of contagion without the tick, unless, of course, by inoculation with the blood. I am convinced that among the grazing farms of the Upper Hunter River, there are hundreds of cattle which have been taken from the tick-infested districts of Queensland, and the blood of which would produce tick fever in healthy cattle by inoculation in the same manner as we produced it at Mundoolan. The germ, I repeat, has a permanent home in the blood of cattle which have recovered from tick fever, and it is protective against fever in those animals. To what extent it is protective has yet to be demonstrated ; but the progeny of such animals, or of animals inoculated when young calves, are, in my opinion, absolutely immune, and if placed in an infested district would not be susceptible to tick fever. In this way I think New South Wales may, by inoculation of her young stock, be protected from the fever and its deadly consequence, redwater. And in Queensland, although there will be a percentage of inoculated adult cattle still susceptible, their progeny will be immune.

Experiment Continued at North Rockhampton.

That is very encouraging, remarked our representative, and if borne out in practice, will greatly mitigate the terror felt of the spread of the tick pest.

Yes, Mr. Pound replied, but it must be distinctly understood that further experiments are necessary. For example, I am arranging to bring some of

these Mundoolan inoculated cattle to North Rockhampton, as a continuation of the experiment there, to ascertain whether or not they are immune. My impression is that they will be more or less susceptible, and that some of them may again have tick fever, and perhaps die. But the experiment will be an instructive one, in any case. And here let me mention that I preferred taking cattle from the Logan, because it was a district of which there could not be the slightest suspicion of infection. Blood taken from an animal depastured in a suspected district might contain the micro-organism of tick, although to all appearance the animal was perfectly healthy. There are, no doubt, clean cattle in the Central district, but in an experiment of this kind it was well to be perfectly sure. Besides, it might occupy months to ascertain positively whether any local cattle were clean or not. Thus, by bringing these Mundoolan cattle, time would be saved. Mr. Barnes's services will be very useful in this extended experiment, for in taking the temperature night and morning, and keeping the cattle under constant observation, he will find his spare time well occupied. With these Mundoolan animals, let me add, there must be 'control' animals brought up as a test.

Ticks will mature on Horses.

Asked whether he intended to continue further experiments, Mr. Pound said he was most desirous of doing so, but he found some difficulty in getting the necessary authority for the purpose. For example, it was only after continued representation of the importance of the question that he obtained two cows and placed them on Peel Island, for the purpose of ascertaining whether ticks of which a horse had been the host would give tick fever to cattle. He got fifty or sixty young ticks, the progeny of a cattle tick which matured on a horse, and placed them on the udder of one of these cows, leaving the other to serve as a "control" animal. The cow on which the ticks were placed soon developed fever, and ultimately recovered, but was in an emaciated state. Mr. Pound then produced two photographs, one of the "control" cow, which was perfectly healthy and sleek-looking, and the other of the cow after the fever, with drooping head and a general woe-begone appearance. This, he thought, established the fact that ticks carried by horses contained the germ of fever; but the horse was not a congenial host, and very few ticks came to maturity upon it. Still, there could be no question that ticks might be spread throughout the country by horses, and even by wild animals and birds.

Cannot express opinion on Quarantining.

Then you are doubtful whether the quarantine line will protect the southern part of the colony from the tick? said our representative.

With a shrug of the shoulders, Mr. Pound indicated that he preferred not to express an opinion upon that burning question. But he admitted that an inviolable quarantine cordon was scarcely within the range of possibility.—*Brisbane Courier.*

SANITAS DISINFECTANT SOAP.—This preparation seems to us an excellent one. The soap is strongly impregnated with Sanitas, the disinfectant and antiseptic properties of which are well known. It is also a deodorant, and, as we have convinced ourselves, a powerful one, removing quickly all odour from the hands, etc., after a *post-mortem*, and leaving in place the "clean" smell so characteristic of the Sanitas preparations.

THE BACILLUS OF YELLOW FEVER AND ITS DISCOVERER.

It was upon nearly two thousand animals that Prof. Sanarelli experimented in studying the microbe or bacillus of yellow fever, and nearly all of these he found responsive, in greater or less degree, to the disease-inducing action of the bacillus. All mammals respond to it readily; the feathered tribe, on the contrary, are apparently proof against it. The infection finds access through every channel—even through the breathing apparatus—and once admitted into the organism, the bacilli accumulate principally in the spleen. There they remain through the "præ-critical" course of the disease, without appreciable multiplication, till after the lapse of from six to seven days they suddenly appear in the blood, enter on a period of active "proliferation," and cause death by "septicæmia" (putrefaction of the blood). The rabbit, for instance, dies in from four to five days if the bacillus finds access subcutaneously; in only two days if it is introduced directly into the circulation. The dog, the goat, the ass, and the horse, but especially the dog, illustrate this action most significantly, establishing the conclusion that (as Dr. Alberto Guidi puts it), Yellow fever is an infective malady due to a micro-organism, well defined, and capable of being cultivated in the ordinary bacteriological media; a micro-organism, however, which may be isolated, not only from the dead subject but from the living, though the isolation presents difficulties due to the constant interpolation of secondary infections and to the comparative paucity in which the micro-organism is met with in the system. Its characteristics are so well defined that it may be distinguished easily among all other bacilli hitherto described, the process of distinguishing it requiring not more than twenty-four hours. The scantiness of the numbers in which it appears and the violence of the symptoms it induces justify Dr. Sanarelli in the conclusion that its action is that of a poison of peculiar energy.

Dr. Sanarelli experimented on five men—in two by subcutaneous, in three by intra-venous, injections. The details of these he will shortly give to the world; meanwhile, he announces that in each case he was able to produce the typical yellow fever, "accompanied," he says, "by all its imposing procession, anatomical and pathognomonic—the fever, the congestions, the vomiting, the hæmorrhages, the steatosis of the liver, the intense headache, the pain in the 'cerebro-spinal battery,' the nephritis, etc., ending in the icterus, the delirium, the collapse—every symptom, in short, that constitutes the one and indivisible basis of the diagnosis of the fever." Its analogies with typhoid form a highly interesting section of his monograph, including the similar diffusion of their poison by the air and by water, while the bacillus (markedly in the case of the "icteroides") favours the entry into the organism of other septic microbes. The yellow fever bacillus, moreover, has a specific action on the liver, causing in that viscus a fatty degeneration and other anatomical changes, to which is partly due the "icteric characteristic" (jaundice) of the disease; and on the kidney it produces inflammation of an aggravated kind. The lesions, hepatic and renal, it produces are dealt with at great length by Dr. Sanarelli; but, addressed as they are *ad clerum* rather than *ad populum*—to the profession rather than to the "profane"—they may be passed unnoticed here. More to our present purpose is the "elective seat" of the malady, and the channel through which it finds admission into the organism.

Dr. Sanarelli cites many facts and considerations which he thinks decisive in support of an "atmospheric transmission" of the bacillus. This conclusion does not eliminate the possibility that the digestive apparatus may be a "channel" (not a seat) of the poison. Indeed, the catarrhal disorders of the liver, to which the new arrival in the tropics is so liable, may facilitate the entrance of the microbe. But its transmission through the air, as studied by Professor Sanarelli on shipboard, becomes little short of convincing in the

light of his observations. Take, he says, the badly-ventilated ship, the habitat of a fetid humidity constantly reinforced. The damp, the heat, the lack of ventilation, the co-efficients of the epidemics so frequently developed in sailing craft, lead up to a fungoid impregnation of the atmosphere, which Dr. Sanarelli found especially favourable to the diffusion of the "bacillus icteroides." In certain cultures, where this micro-organism, sown for some time, appeared incapable of growth, he had only to subject it to an atmosphere so impregnated to cause its rapid development and its complete acquisition of the power to induce the pathognomonic signs of yellow fever in the subjects in which it was injected. It is probable, he proceeds, that on board such ships the conservation and germinating of this micro-organism are due less to the damp heat considered as a physical agent, than to the fungoid impregnation (mould), favoured by the conditions of air and temperature prevailing in the ships referred to. Here Dr. Sanarelli approaches (seemingly without knowing it) a theory advanced some years ago by Dr. Charles Creighton in the *North American Review*—to wit, that the holds of slave-vessels generated, or more than "favoured," the "materias morbi" of yellow fever; but let that pass. The noteworthy resistance, he continues, offered by the bacillus icteroides to desiccation (the principal factor of natural disinfection), and its great longevity in sea-water, explain readily enough the easy acclimatisation of yellow fever in maritime exposures, aggravated by the importation of its "agente specifico" (specific agent).

This agent and its modus operandi once ascertained, as it now appears to be, and yellow fever put on the same level with the other great infective maladies, we can share Dr. Sanarelli's hope that we are within measurable distance of a treatment, at once preventive and curative, by which the scourge of the "Two Americas" may be reduced to impotence. He is, in fact, engaged, with the concentration of purpose and research so honourably characteristic of him, on the preparation of a serum which may be found to antagonise the bacillus he has discovered, while his observations on the conditions favouring the transmission and propagation of the bacillus may well absorb the Department of State Hygiene he represents in the Uruguayan University. His work on the serotherapy of yellow fever, according to Dr. Alberto Guidi (whose notes in a Tuscan contemporary are the most instructive comment yet given on the subject), is already on the lines so effectively laid down by Behring and Roukes, and it is possible that our "wondrous Mother Age" may not be many months older before adding to the trophies of the nineteenth century what many would have been content to anticipate for the twentieth.—*Scotsman.*

HOW THEY DO IT IN AMERICA.

SPASMODIC COLIC.

At 3 p.m., November 12th last, a grey mare, weighing between 1,300 and 1,400 lbs., four years old, came to my barn in great pain. I diagnosed it spasmodic colic, gave a drench composed of Fl. Ext. Bell., Fl. Ext. Cannabis Ind. aa ʒii, Ether ʒiss, Aqua 1 quart, followed this a short time after with ball composed of B. Aloes ʒviii, Nux Vomica ʒi, and Zinziber. She became quiet in half an hour. I put on several blankets. She remained quiet for four hours, ate hay that was in the box, also some of the bedding. I gave her a little water with the chill taken off, also a small bran mash. Before she had eaten all the bran, pain began to make itself manifest again. Repeated my first dose half an hour later; gave Fl. Ext. Bell., Cannabis Ind., ʒii aa,

Ether ℥ss, Whiskey ℥vi, Aqua 1 quart. Repeated this in an hour. Symptoms getting worse all this time ; very hard drench ; would not swallow. Some time after this I gave a hyperdermic injection of 3 grs. of morphine. This seemed to make her worse. Before this she would lie down and roll, but after that she walked around the stall, turning to the left all the time ; would not go the other way. I then applied mustard to the abdomen, covered with paper. Some time later I gave ½ gr. morphine every ten minutes. This seemed to give relief for a short time. I had given her several injections, per rectum, up to this time without any result. I did not give anything for an hour. Then gave Eserine and Pilocarpine, 1½ grs. each, intertracheal. The only apparent result was the action of Pilocarpine; profuse swelling, fast breathing and salivation. The violent effects wore off in an hour and a half. I then gave a ball composed of Nux. Vomica ℈i, Carb. Ammonia ℈i, Fl. Ext. Bell., ℈i, Zinziber. I repeated this without the Nux. Vomica in two hours time. This gave no ease. I then gave small doses of morphine again. The owner then proposed bleeding and aconite. This I would not do. He went to breakfast, then, in disgust, but came back, and proposed giving her jalap, Croton Oil, Quicksilver (or anything that would put a hole through her). I said, " Well, I have still a very strong medicine, which I can use—Barium Chloride." I gave 13 grs. intervenously. The only change difficult breathing, pulse fast and weak, turning the head to left side. After an hour he said, " Give her another dose." I explained what the result would be. He said, " Make it strong " I then gave 40 grains. She died in 37 minutes, fighting, striking her head with her fore feet, and acting as if suffocated. The *post-mortem* which I had at once revealed small intestines inflamed and peritonitis. On looking closer, I found a part of the ileum with a stricture about nine inches long. The coats double the thickness they should be, and a lighter colour. In cutting into it, it was empty and very tough. Diaphragm ruptured in several places in parts. Bowels only slightly distended with gas.

I might add, I charged the owner 10 dols. After trying to beat me down, he said vets are the d——t rogues in the country, and half of them do not understand their business. Now, if you would have bled the mare she would be alive and able to go home.—[We print this *verbatim.*]

Notes and News.

It is fifteen years ago since Veterinary-Lieutenant Colonel Kettlewell opened the Lahore Veterinary College, and since then the record has been one of constant and steady progress. The institution has had to battle with much in the way of prejudice and indifference, but it has had the good fortune to be blessed with Principals of real merit, full of professional zeal, and animated with a desire to make the College in every way an efficient institution. The report of Veterinary-Captain Pease, who succeeds Veterinary-Captain Nunn, C.I.E., who in turn succeeded Veterinary-Lieutenant-Colonel Kettlewell as Principal of the Institution, records a year of continued progress. It is satisfactory to find His Honour the Lieutenant-Governor fully conscious of the valuable work which is done by the Lahore Institution, and awake to the necessity of rendering Government assistance in further equipping it. The absence of an infectious hospital from an institution which makes fair claims to be the most complete and efficient of its kind in India is surely a deficiency which should be remedied at the earliest possible opportunity, and we trust that the cordial support which His Honour gave to the suggestion of the Principal, that such a department should be instituted, will speedily bear

fruit. It is unnecessary that anything should be done of a pretentious character. There is ample ground convenient to the present College which could be built upon at comparatively little expense, and where it would be possible to deal with those cases of infectious disease so fatal to agricultural cattle. It is of paramount importance that the students of veterinary science in the Punjab should have opportunities of acquainting themselves with the dread disorders in the shape of rinderpest, anthrax, glanders, and surra to which horses and cattle are subjected, and with which they are almost certain to have to deal when they leave the Institution. At present the Institution is entirely without these facilities, and in cases of infectious disease the animals have to be destroyed without the students having an opportunity to examine them.—*The Civil and Military Gozette.*

THE DALKEITH SHOW.—The annual show of the Dalkeith Agricultural Society was held on Saturday in the finest of weather. There was a very good show of stock, though most of the principal exhibits have lately been exhibited at the metropolitan and local shows. Mr. Dobbie, the enterprising Secretary of the Society, had, as usual, made the most complete arrangements for the show, and everything passed over in the pleasantest manner possible. Light-legged horses made a good show. In the class for brood mares eligible for entry in the Stud-Book of the Hunters' Improvement Society, Messrs. Williams and Son, of the New Veterinary College, Edinburgh, were first with Alice Benbolt, a stylish bay mare, sired by the Hermit horse Torpedo. Messrs. Cairns, Walltower, were second and third with Lady Cashier and Bridget respectively. In the class for three-year-olds, the Graden filly, which was first at the Edinburgh Show, was not forward in time for the judging, owing to an inexcusable delay on the part of the railway company. Mr. Ainslie, Dodridge, had first prize for a good chestnut; Mr. Craig, Currie Hill, was second with one by Humboldt 2nd; and Mr. Skirving was third with Minnie, sired by Sir Harry. In the two-year-old class, which was one of the strongest classes in the show, the progeny of Messrs. Williams' thoroughbred horse, Humboldt 2nd, made a clean sweep of the honours. Messrs. Williams were first with a beautiful gay-stepping animal; Mr. Kennoway, Polton Farm, was second with Lady Deadlock; Mr. Ainslie, Dodridge, was third with a stylish chestnut; and Messrs. Williams had the h.c. ticket.

MUZZLING AND RABIES.—Miss Thornton, of Kinnerton Street, Knightsbridge, having forwarded to the Board of Agriculture a memorial from the Animals' Institute, asking for the repeal of the Muzzling Orders, Mr. T. H. Elliott, the Secretary of the Board, has replied. He states that rabies is not so prevalent now as it has been, but is by no means rare; 85 cases have occurred during the current year in Great Britain, and of these 20 were found within the City and Metropolitan police districts. The Board, with a view to secure the complete eradication of the disease, have issued Muzzling Orders for all those districts where there is reason to fear the occurrence of further cases, and though the Board have no reason to suppose that the areas to which those Orders apply are too restricted to secure the object they have in view, steps will promptly be taken to deal with any case that may arise beyond the borders of these areas. With reference to the suggestion of the memorialists, that a large amount of suffering by irritation and laceration is caused by the Order, the Board are satisfied that the wearing of a muzzle does not necessarily cause any discomfort to the dogs, if the careful and personal attention of the owner is given to the proper fit and construction of the muzzle. The Board regard the use of wire muzzles as essential, inasmuch as it has been shown that leather muzzles are not effective, owing to the ease with which they can be torn or dislodged when worn by use or saturated with moisture.

SERPENT'S BILE AS AN ANTIDOTE FOR SNAKE BITE.—A meeting of the Royal Society of Edinburgh was held July 5th—Lord M'Laren, one of the vice-presidents, in the chair. Professor T. R. Fraser read a paper on "The Anti-Venomous Properties of the Bile of Serpents and other Animals, and an Explanation of the Insusceptibility of Animals to the Poisonous Action of Venom introduced into the Stomach." In his Paper Professor Fraser described the results of experiments which he had conducted with the bile of the African cobra, the puff adder, the rattlesnake, and the grass snake, tested against the venom of the African and the Indian cobra by subcutaneous injection in the case of animals like the rabbit. The experiments showed that the bile of venomous serpents was able, when mixed with the venom of serpents, to prevent lethal doses of the latter from producing death; and that the bile was indeed so powerful an agent in doing this that a quantity actually smaller than the quantity of venom might be sufficient for the purpose. Although when in the alimentary canal bile was non-toxic, the bile salts and bile pigments acted as poisons when injected under the skin or into a blood vessel. It was improbable, therefore, that the bile in its natural form could be used as an antidote, except by stomach administration, or by application to the wound caused by a snake bite. The successful result of an attempt to isolate its antidotal constituent had, however, rendered it possible to test the therapeutic value of this constituent when it was introduced into the blood of an animal which had already received a lethal dose of venom. An experiment made with a small quantity of puff-adder bile, taken in conjunction with a considerable number of *in vitro* experiments that had been made, not only supplied strong confirmation of the evidence that bile was able to render serpents' venom inert, but also suggested that from bile there might be produced an antidote for snake-poisoning which, in its antidotal value, was at least equal to the most powerful anti-venene, or anti-venomous serum, as yet obtained from the blood of immunised animals. Several other papers were read in the course of the evening.

PRESENTATION.—On Saturday evening, July 10th, the committee of the Carlisle May Day Horse Procession Society presented Mr. J. J. Bell, V.S., their chairman, with a cruciform gold Jubilee medal in recognition of his services to the Society since it was formed in 1883, and especially of the efforts he had made in regard to the procession on Jubilee day. Upon the obverse side of the medal there is Mr. Bell's monogram with the name of the Horse Procession around it surmounted by a crown, and on the reverse side there is an appropriate inscription. Mr. Bell suitably returned thanks for the handsome gift.—*North British Agriculturist.*

PROFESSOR KOCH AND HIS COLLEAGUES.—Professor Koch, the illustrious *savant* from Germany, accompanied by Dr. Gaffky, Professor of Hygiene in the University of Geiken, and Professor Pfiffer, Chief of the Science Department of the Institute of Infectious Diseases, Berlin, visited the Veterinary College yesterday forenoon, where they were received by Veterinary-Major J. Mills, Principal. After a short sojourn at the College the party proceeded to the German experimental station, situated at the rear of Government House, Parel, where Professors Gaffky and Pfiffer demonstrated to Professor Koch what had been done since their arrival, and went over the charts and clinical records. The experiments conducted here have been of the most interesting nature, and every animal from the horse downwards has been subject to inoculations with the plague bacilli, but, speaking broadly, the majority of them, happily for this country, were found not to be susceptible to the true plague. The monkey seems, so far as the experiments have gone, to be the animal most likely to give typical signs of the plague. So much for Darwin's theory of the missing link. Professor Koch also visited Government House Hospital, Parel, and the Arthur Road Hospital. Professor Koch expressed

himself as most anxious to demonstrate his process of immunising cattle against that frightful scourge, rinderpest, and steps have been taken to communicate his wishes to the Government of India by telegram, so that he could meet Dr. Lingard, the Imperial Bacteriologist, in connection with the outbreak of rinderpest now existing near Agra. It is to be hoped that every facility will be given to Professor Koch in this direction, as any project that would minimize the frightful annual loss in cattle and money, amounting from preventible cattle diseases alone, to a sum of £6,000,000 sterling, would be hailed with extreme satisfaction, both by Government and the ryot.—*Times of India*, May 4th, 1897.

TUBERCULOSIS AND MILK.—The following remarks from the report for 1896, of the Medical Officer of Health for Mid-Lothian, will be read with interest as bearing upon a matter recently discussed in our columns:—"Of the 1,232 deaths in the landward parts of the county during 1896, no fewer than 178 were due to tubercular disease; that is to say, that about every seventh person who died, died of this dreadful scourge. But these figures even do not give one an adequate idea of its prevalence among the comparatively young. The total amount of deaths in the county under 25 years of age, amounted to 468, and of these 83 succumbed to tubercular disease, or every fifth or sixth person who died during the year below 25 years of age, died of it. The mortality from it, in fact, was not far short of that from all the other infectious diseases taken together, including small-pox, typhus fever, typhoid fever, continued fever, measles, whooping-cough, erysipelas, puerperal fever, and other septic diseases and diarrhœa. It has for long been a proved and an established fact that the milk of tuberculous cows, and especially when their mammary glands have become affected, can produce tubercular disease in the lower animals. It is now as certain that the human subject is similarly affected by partaking of such milk, and it thus becomes a serious duty to see that this one known source of the origin of the disease should be eradicated. That there is real and not imaginative danger to the community, I have only to mention that it is computed that 20 per cent. at least of the cows of the average dairy are tuberculous to a greater or less degree. We have in Sir Thomas Gibson-Carmichael, the Member of Parliament for the county, one whose example might well be followed by all stock-breeders. His example has stimulated others elsewhere; but I would especially call attention to one, a dairyman in Mid-Lothian, who, a year-and-a-half ago, determined to weed out from his herd all tainted animals. He gave Professor Dewar, of the Dick Veterinary College, and the local veterinary surgeon, a free hand to get his whole herd healthy, and he had the courage to advertise for sale all the animals that reacted to tuberculin as "animals unsound." These animals were purchased, but at some loss to the seller. This dairyman, Mr. Thomas Fisher, of Whitehall House Farm, Hawthornden, has now a stock of over thirty dairy cows free of the disease, and under the constant supervision of Principal Dewar, who tests them from time to time. Mr. Fisher's milk is supplied to west-end customers in Edinburgh, who are aware of the care he exercises regarding the health of his cows, and he receives 3d. per gallon more for his milk than other dairymen get. It would be well that medical practitioners in the city, and that directors of public institutions should encourage dairymen of this class."

THE announcement that Principal Williams, at the New Veterinary College yesterday, presented a medal to a lady student who was not only a registered student of the University of Edinburgh, but also of the New Veterinary College, where her career had been a highly meritorious one, marks another stage in the emancipation of woman, and raises some interesting problems which can only just be indicated here, as the lady's claims are, it is understood, to be submitted to the judgment of the Law Courts, whether in

Scotland or England, remains to be seen. It seems that two other ladies have at different times endeavoured to enter the Royal Veterinary College in London, but have been prevented by the Council, which, while admitting that students may be of either sex, contends that the "intention" of Parliament was to qualify men only. It is true that the Act of Parliament specifies "he" in certain cases, but what are we to make of the fact that the Council of the Royal College of Veterinary Science are bound by charter to examine students from any of the veterinary colleges who may present certificates that they have attended the necessary classes? The Royal College has made two stipulations—(1) that the educational qualification shall be sufficient to entitle students to be registered medical students, which qualification has been obtained by the lady in question; and (2) that the candidate, before obtaining a diploma, shall be at least twenty-one years of age. The Royal College has nothing in its charters or bye-laws stating that the student must be either male or female, and if it should rely upon the simple reference to "he," will it not be likely to find itself in a very awkward fix? For if the College proves that the registration of veterinarians is confined to the male sex, what is to prevent any woman from styling herself "veterinary surgeon" and setting up in practice? Were an unqualified man to do so he would be liable to a fine of £20, but by the contention of the Council this Act will not apply to women. From this it will be seen that the New Veterinary College lady student case is likely to provide ample opportunities for the exercise of legal wits.—*Edinburgh Evening Despatch.*

Edinburgh Agricultural Show.—Light-legged horses were, as usual, a feature of the show, no fewer than thirty-eight made hunters being entered. The section was not only excellent in point of numbers, but in the quality of the stock forward. In the brood mare class of hunters, Mr. Sanderson, Hexham, was successful in carrying off the first award with "Fairy Queen," bred by Mrs. Livesay, Armagh. A thorough-bred animal of great quality and a well-known prize-taker at various shows, she easily gained her place yesterday. Mr. Oliver, Thornwood, Hawick, gained the second premium in the class with "Mary," by "Tyndale," a big, powerful animal, with less quality than the first-prize taker, but at the same time a capital stamp of a brood mare. In this class the third premium went to Messrs. Williams and Son, New Veterinary College, Edinburgh, who showed "Alice Benbolt," a beautifully-topped mare, which has not, however, the bone of the other prize-winners. In the foal class, Messrs. Williams, who have gone in with considerable success for the breeding of light-legged horses, took the premier place with a chesnut colt by their own horse, "Humboldt II.," out of the third prize mare, "Alice Benbolt." This foal, which was an outstanding winner, is a particularly fine youngster, being, indeed, one of the finest of the young stock of hunters seen in this showyard for some time. A bay colt foal, shown and bred by Mr. Sanderson, was second in the class. This is a grand topped animal, just a trifle weak, however, in the fore-legs. Mr. Taylor, Davidson's Mains, was the exhibitor of the foal placed third—a pretty little animal with some quality, but seen to some disadvantage owing to its tender age.—*Scotsman*, 16th June.

Professor W. R. Davis, of the New Veterinary College, sailed on Saturday 12th June, by the "Tantallon Castle" to Cape Town, *en route* for Basutoland, where he is about, on behalf of the Government, to endeavour to suppress rinderpest. He is also to investigate the various cattle diseases in that country. Professor Davis is engaged by the Government for a year, or perhaps longer.—*Scotsman.*

BLUNDERING WITH SWINE FEVER.—There was one very significant passage in the monthly veterinary report read at the Council Meeting of the Royal Agricultural Society the other week. The passage in question was as follows :—

> In the course of the four weeks ending 22nd May there were 35 outbreaks of anthrax, 71 outbreaks of glanders, 12 outbreaks of rabies, and 235 *outbreaks of swine fever*. In the previous four weeks the numbers were—Anthrax, 38; glanders, 83; rabies, 15; *and swine fever*, 217.

From this significant passage it is perfectly evident that, after four years of costly and almost incredible blundering, the Board of Agriculture are no farther forward with the work of stamping out swine fever than they were when they began. This, however, is not to be wondered at, when it is remembered that frequently, in the very centre of a cluster of piggeries, the dead and dying pigs which had succumbed to the disease were left lying about the premises till the "travelling inspector" should find it convenient to call at the place and give the order for the slaughter of the stock. But, with all this laxity in the carrying out of their own Orders, the Board are showing themselves capable of issuing Orders which inflict great and unnecessary hardship on pig-owners. A good illustration of that fact comes to hand this week from Fifeshire. An outbreak of swine fever has taken place at Dunfermline, and out of the nine animals affected at that place one was a pig which was said to have come three weeks before from Duniface. There has never been swine fever at Duniface, and if that particular pig at Dunfermline had been removed from the Duniface piggery three weeks before, it must have contracted the disease after going to its new quarters. But, despite these incontrovertible facts, the Board have scheduled the farm of Duniface as an infected area from which no pigs can be removed. This is just of a piece with the Board's imbecile management of the swine fever business.

A "LAY" VETERINARIAN.—They do NOT manage these things better in America. We in this country recently had experience of official blundering when the Veterinary Department of the Board of Agriculture was, for the time being made a subordinate department of the "Animals Division," which was headed by an unprofessional man. But this system proved so wholly unsatisfactory, and the opposition to it from the veterinary profession was so strong and well founded, that the old order had to be reverted to, and the Veterinary Department had to be restored, with Professor Cope as its official head. The same sort of official blundering is going on in America just now, and promises to lead to results which are fraught with much interest to the stock-owners of this country. It appears that the Governor of the State of Illinois—the Hon. John Tanner—has, in spite of all opposition from veterinarians and others, appointed as State Veterinarian an individual who is not a graduate of a veterinary college, and who is, moreover, opposed to veterinary colleges and higher education. Now the Union Stockyards of Chicago, Illinois, is the place where the bulk of the western cattle, hogs, etc., are sold for export, either on foot or in carcase form. The State Veterinarian is at the head of State inspection, and should be eminently experienced and well qualified to make proper diagnosis of disease and findings from *post-mortems*, etc. The present incumbent of the office is showing a disposition to pass actinomycotic cattle very leniently, so as to curry favour with the buyers and shippers. He has no experience of the use of the tuberculin test nor of the mallein test. In short his abundant lack of veterinary training renders him unqualified for the post of State Veterinarian. So disgusted are the members of the veterinary profession with this appointment that they have decided to lend him no aid in his State work. At the last meeting of the Chicago

Veterinary Society, held on 13th May, the members passed the following resolutions:—

> Whereas, the Governor having appointed a non-graduate to the position of State Veterinarian for the State of Illinois;
>
> Be it resolved, that it is the sense of this meeting that the Assistant State Veterinarians among our members do tender their resignations as such; and further, that none of our members do apply for or accept a similar position under the present incumbent.

Writing in the *Chicago Inter-Ocean* of 24th ult., Mr. Robert G. Walker, V.S., President of the Chicago Veterinary Society, very forcibly says:—

> Great Britain and Germany are noticeably strict regarding meat imports from the United States, the latter country having recently placed fresh restrictions on the importations of American meat products. Veterinary surgeons were formerly stationed at the principa ports of Great Britain to which American cattle were shipped, to prevent the entry of animals considered unfit for slaughter. The bureau of animal industries at Washington found it necessary to send efficient American veterinarians to meet these British professionals. Among them was an Illinois man, a graduate of a Chicago veterinary college; and through their efforts the prejudice against the American cattle was often overcome, and they were admitted. These countries are no less alert and watchful now. How, then, will they regard the placing of an inefficient man at the head of this department in a State that contains a city that ships cattle so extensively as Chicago? . . .
>
> Germany, moreover, is at present considering the advisability of a quarantine against American horses. In Chicago is the largest horse market in the country, and the best buyers are the people of foreign countries, the home market being very limited; so, were it not for the foreign trade, it would not pay breeders to send horses here and keep them even for a week. Facts like these should receive earnest consideration when appointments are made either in the State or city.

Evidentiy the warnings of Mr. Walker are fully justified, for Mr. Bowhill, F.R.C.V.S., formerly Professor of Bacteriology at the New Veterinary College, Edinburgh, who has recently returned to this country from America, informs us that in the vessel in which he crossed the Atlantic there were three horses that died of "pink-eye" on the passage. In view of the above facts, our veterinary inspectors on this side the water will be more than ever on the alert for contagious disease among cattle and horses from America. With the office of State Veterinarian in Illinois held by an unprofessional man, who is being rigidly "boycotted" by the members of the veterinary profession in that State, and with American horses dying of "pink-eye" on the passage to this country, a lengthened quarantine on American horses imported into this country is one of the certainties of the near future.

Extracts from Foreign Journals.

TUBERCULOUS MAMMITIS.

BY PROFESSOR ED. NOCARD.

Tuberculous mammitis is a rare lesion. Bang estimates at 3 per cent. at the most the number of tuberculous cows whose udders contain specific lesions. Diagnosis of it is very difficult; its clinical signs are vague, and can give only a certain sum of probabilities, which is always pretty far removed from exactitude. Because a cow has reacted to tuberculin, it does not necessarily follow that the induration of its udder is tuberculous; tuberculous cows are liable, just as are sound cows, to contract mammites of various kinds.

Bacteriological examination of the milk of the suspected udder is of very great service when the lesion is very widespread and the bacilli in the milk numerous. Determination of the specific bacillus allows of the tuberculous

nature of the lesion being affirmed; but because bacteriological examination of the milk may not have given a positive result, it must not be concluded that the lesion is not tuberculous. One can imagine all the difficulties of searching for bacilli diluted in the considerable mass of milk which the udder secretes every day. By turbination of the suspected milk we succeed better in finding the bacillus in the glairy deposit left in the bottom of the vessel; but the turbine is a dear instrument, which practitioners have not always at their disposal. Inoculation of 5 to 10 cubic centimetres of suspected milk into the peritoneum of the guinea-pig is a sure means of making a diagnosis; though the bacilli in the milk inoculated be ever so few they give the guinea-pig an abdominal tuberculosis, which is absolutely characteristic, and which kills it in a space of time varying from six to eight weeks. The animal experimented on may even be killed much sooner, twenty-five or thirty days after the inoculation. There is even then tuberculosis of the epiploon, of the mesenteric or sub-lumbar ganglia, of the spleen and the liver, which can leave no room for doubt.

Intraperitoneal inoculation is a very sure method of procedure; if several cubic centimetres of milk have been injected; if, above all, milk is injected which has been obtained just at the beginning of milking, the result of the experiment may be trusted; if the guinea-pig does not become tuberculous, it is because the mammary lesion is not of a tuberculous nature. But this excellent method has a drawback which is sometimes awkward; one must wait twenty-five days at least before pronouncing an opinion; now, it is always of great importance to know as soon as possible what is to be done. I had quite recently to pronounce an opinion on a case of this kind: A fat cow, an excellent milker (she was still giving four gallons of milk), had induration of the two posterior teats; tuberculin gave grounds for affirming that she was tuberculous. Was her milk dangerous? Repeated bacteriological examinations had given me only negative results; after the action of the turbine, I had succeeded in bringing to light some scanty masses of Koch bacilli; the mammary lesion was, then, very tuberculous; but I needed a great deal of patience, even with the aid of perfect apparatus, to arrive at certainty. The idea then struck me to have recourse to the use of the "trocar-harpoon" of Duchenne, of Boulogne, formerly recommended for making a diagnosis in doubtful cases of trichinosis. This trocart, which is hardly more than two millimetres (2-25th in.) in diameter, allows of the extraction of a small fragment of the tissue, into the thick part of which it is introduced; thrust into the indurated mass of the suspected teat, it brought me back a tiny fragment of the diseased tissue, squeezing of which enabled me to show in a few minutes a considerable quantity of Koch bacilli. The operation is extremely simple, absolutely harmless, and thoroughly efficacious. I can, therefore, do nothing better than recommend it warmly to those of my *confrères* who may have to give an opinion on analogous lesions; in less than an hour they will by this means be enabled to form a diagnosis with complete certainty.

ATROPHY OF THE PAPILLÆ.

A horse had a fall in its stall, got up again, and seemed none the worse for it. Several days afterwards it was found that it had become blind. Examination showed the following:—All media in the eye transparent and clear, background normal, papillæ very much injected, on the peripheral region white, club-shaped spots (perhaps products of the exudation of the papillæ). After a few months the report was:—Papillæ grey-coloured, smaller than normal, but rounded, the papillary border indeterminate, of the blood-vessels nothing to be seen. The retinal colouring was wanting in

places, in other places it was increased (derangement of supply in the arteria centralis ?), the iris glaring, greatly dilated, complete blindness. Professor Vennerholm is of opinion that the cause is to be discovered in a bleeding in the chiasma, occurring suddenly, and in both eyes consequently on the fall.—*Zeitschrift für Thiermedicin.*

A CASE OF PANCREATIC DIABETES OBSERVED IN THE DOG.

The discovery of von Mering and Minkowsky enlarged the field of the pathogeny of sugar-diabetes by showing, some six years ago, that removal of the pancreas was sufficient to create the malady. The results obtained by these authors have been checked and confirmed by numerous experimentalists, and it has been incontestably proved that total extirpation of the pancreas is followed at the end of a few hours by the appearance of sugar in the urine. The glycosuria thus provoked is accompanied by azoturia; it brings on rapid emaciation, and the death of the subject experimented on, after a brief delay. This operation, in short, provokes the essential symptomatic effect of emaciating diabetes.

As the ligature of the excretive canals of the gland produces nothing similar to the effects of extirpation, these cannot be attributed to the stoppage of the flow of the pancreatic fluid into the intestine. On the other hand, if, instead of extirpating all the pancreas, the very smallest portion of it be preserved, this portion is sufficient to prevent the production of the experimental diabetes. This latter peculiarity has led us to the belief that the pancreas opposes glycosuria only by means of an internal secretion, that is to say, a secretion whose product is destined to enter into the blood. From this conception to its therapeutic application there was only a step, and it was believed possible to cure patients suffering from diabetes by administering to them either pancreas in substance or extracts of the same organ, or, further, by grafting on their organism portions of the same gland borrowed from animals. Unfortunately, *organotherapia* in regard to diabetes, in spite of the seductiveness of the theory, has not given such results as might have been expected.

From the pathogenic point of view, the researches of MM. Chauveau and Kaufmann have thrown light upon the physiological mechanism of the action of the pancreas, by showing that the internal secretion of this gland does not act directly on the organ that generates the glucose, the liver, but indirectly by acting on the bulbo-medullary centres; the result of their labours is to show that removal of the pancreas acts in absolutely the same way as the experimental injury of these centres. It is not, however, superfluous to add that Professor Lépine, grounding his assertions on experiments, attributes a glycolytic secretion to the pancreas, that is, one whose presence in the blood would cause regular destruction of the glucose, while its absence would mean accumulation of it. Clinical surgery has hastened to bring forward its body of facts to confirm the fundamental discovery of von Mering and Minkowsky; doctors have collected a good number of cases of emaciatory diabetes in which autopsy revealed only pancreatic lesions.

In veterinary medicine, in which sugar-diabetes is infinitely rarer than in our own species, the observation of facts of this order appears to me to be still a novelty. I have several times met with this malady in the dog, when it was almost always of a grave character, causing rapid decline of the subjects affected, but I have only rarely had an opportunity of making a *post-mortem* examination. This opportunity having been offered me in the course of last year, I give below the statement of the manifestations of the disease during life and after death. I must mention that I only surmised the disease of the pancreas during life, and that it might have easily passed unperceived in the dead body had I not directed my investigations to this

point specially. I also think that cases of this kind must have been misunderstood in many autopsies, and that the rarity of the observations does not correspond to the reality of the clinical facts.

The subject was a schipperk bitch, aged, though still lively, quick, and frisky, like most of her race. She was shown us in July, because for some time she had an unquenchable thirst, and was visibly growing emaciated. On making enquiries, I learnt that she ate gluttonously, oocasionally eating her neighbours' share, and that she drenched the floor with her urine. She had three hard tumours without adenitis or any other malignant characteristic in the region of the teats; these tumours were several months old.

Chemical examination of the urine showed the existence of glucose in great quantities. It was thus a case of sugar-diabetes, glycosuria, polyuria, polydipsia, polyphagia, autophagia, glycosuria, the primary factor and the consecutive factors were all present. The following diet was instituted, suppression of hydrocarbonic foods, feeding with flesh, fish, eggs, vegetable soup, and a daily administration of cod liver oil, and for a few days only antipyrin. Testing of the urine after eight, and then after 15 days of this diet still showed a pretty great proportion of sugar. The testing was performed several times afterwards with same results. The animal lived on thus till December, growing weaker and weaker, worn almost to skin and bone, kept up by her extraordinary appetite and by tonics, quinine wine and cod liver oil. On different occasions she was attached with intense diarrhœa, following on periods of constipation and combined with decomposition of matter. Several times, too, she fell into a profound coma, which lasted for some days, during which she hardly ever rose, refused to eat; this was combated by ingestion of mixtures with an alcoholic base.

Autopsy.

Extreme thinness. The two inguinal teats were the seat of tumours of the size of a nut, hard, neither adherent nor ulcerated, without any ganglionary ring when struck (*adeno-fibromata*). It is noteworthy that the number of these neoplasms was greater at the beginning of the malady; the two remaining ones had diminished in size, the others got better without treatment. Internally the only lesions observed were the following: liver swollen and yellow; the upper lobe more developed than in its normal state, and lying on the mesentery of the duodenum; it adhered to that part stretching from the duodenum to the abdominal wall; it was quite easy to detach it, and the peritoneum thus laid bare was seen to be of a dull colour and a little swollen. It was not a very easy matter at first to discover the pancreas; it had lost its yellow tinge and was reduced to a string three centimetres long, and a centimetre in thickness on triangular section, lying against the duodenum and disappearing near the right kidney. This string was hard, of a dead white colour; it lay close to the intestines without coinciding with it. It must be borne in mind that in its normal state the pancreas of the dog is of great length (20 to 40 centimetres), running beside the duodenum all its length and then descending vertically behind the stomach. The two kidneys had their capsule opaque, but not adhering to their proper tissue; the latter was discoloured, its consistence and constitution normal; the right kidney adhered slightly to the liver; this adherence continued that of the duodenal mesentery. Histological study of the pancreas gave the following results: The glandular lobules were composed of acini, normal in dimension but covered with an absolutely degenerated epithelium; the cellular limits were faint or invisible; the protoplasm of the enchymatic elements was homogenous and could be diffusely stained by colouring reagents; the nucleus was indistinct even after the action of the latter. The sustaining tissue of the acini showed no appreciable injury; the interlobular tissue alone was thickened and sclerotic: the walls of the arteries were thickened and surrounded by fibrous

concentric strata. The excretive canals presented irregular dilations. To sum up, the organ bore the marks of atrophy with degeneration of the epithelium. The liver showed fatty degeneration of the cellules of the centre of the lobules, with heaping together of those of the periphery; there was no vascular stagnation; sclerosis existed in a slight degree but irregularly distributed. The kidney was the seat of elementary lesions, the epithelial cellules of the convoluted tubes were affected with hyaline degeneration at various points. Such are the facts I have collected. As to their origin, I have no good hypothesis to put forth concerning the genesis of the pancreatic lesion.—Contributed by M. E. Liénaux to the *Annales Vétérinaires.*

TENACITY OF THE CONTAGION OF FOOT AND MOUTH DISEASE.

In December, 1895, this disease raged in the herd of a landed proprietor in Melleben, but it ran its normal course and was of the benignant kind; in each animal there were the usual symptoms distinctly observable in mouth and hoofs and also to a great extent in the udders. Of course immediately after the outbreak the whole of the cattle were inoculated, and so the disease ran its course quickly and favourably and without sequelæ, and the wounds in hoofs and udders healed nicely. At the end of four weeks the embargo on the estate could be removed, the well-built stalls having been most carefully cleaned and disinfected. Close to the cow-house, but separated from it by a massive wall, was a shed closely packed with straw, and adjoining this were cart-sheds and storehouses. Five months after the disappearance of the above-mentioned calamity the proprietor wished to fill up his stock and bought seven animals from a dealer. Before delivery these animals were, along with other five, examined by me as prescribed by law.; they all remained for six days longer in the dealer's stalls and were once more carefully examined by me before despatch to Melleben. All the animals were healthy, and free from contagion when despatched. In order to observe every precaution the proprietor placed the new cattle in a cart-shed separated by the above-mentioned straw-shed from the large cow-house, but he used the straw from this shed to bed the newly-purchased animals. On the sixth day foot and mouth disease broke out amongst the latter. During these six days the same straw had been used in the large cow-house, in which, along withthe 36 cows that had been ill in December, was a bull that had been bought in March. Not one of the 36 cows was affected, *but the bull took the disease.* On my suggestion an examination lasting over three days was begun; my object was to obtain complete certainty of the immunity of the animals that had formerly suffered. In the course of four weeks it could be asserted with absolute certainty that these were immune although the disease appeared separately in the immediate neighbourhood of the estate. What I wish to point out here is the long endurance of the infective matter in the close packed straw, and also the immunity enjoyed by animals that have once gone through the trouble.—Vet.-Surgeon Georges, of Gotha, in the *Berliner Thierärztliche Wochenschrift.*

ACUTE ARTHRITIS OF THE HOCK CONSECUTIVE ON THE APPLICATION OF POINT-FIRING.

This arthritis set in *twenty-one days* after the operation, and after only two days of moderate work of less than three hours a day. The case is interesting on account of the abnormal conditions under which it arose. As a rule,

arthritis consecutive on penetrating cauterisation develops, not three weeks after the operation, but in the first few days which follow it, and the first signs of this complication are combined with those which accompany cauterisation itself. In any case arthritis, always possible, ought not to throw discredit on point-firing, for as M. Labat, the author of this interesting observation, says judiciously, "How great is the number of horses severely cauterised, which, when set to work before the acute effects of the fire have passed off, escape arthritis, and get cured whilst working."—*Revue Vétérinaire.*

THE EMPLOYMENT OF VERATRINE AGAINST CERTAIN DIGESTIVE AFFECTIONS OF THE LARGER RUMINANTS.

The author of the paper under review, M. Queyron, repeats the observation that as the mucous membrane of the first gastric compartments of ruminants does not lend itself to absorption there is no reason to prefer, for drugs whose action is bound to be rapid, hypodermic injection to administration by the mouth. Many drugs, indeed, act on the coats of the stomachs only after having circulated in the blood, and after having affected the corresponding nervous centres. On the other hand, it is well known that the various compartments of the digestive tract influence one another reciprocally, as is shown by the association of the abnormal manifestations of the one with the disorders of the others. Maladies of the intestine are habitually accompanied by functional disorders of the rumen, and inversely. The result is that the stomachs must form bad media for the transport of medicinal agents towards the intestine affected, and that introduction of drugs subcutaneously must thus be a surer way to obtain our end. The author mentions his experiments in treatment by means of veratrine, putting on a level pilocarpine, eserine, and veratrine, which all cause exaggeration of the digestive secretions, and of the contraction of the muscles of these same organs, he makes the remark that the virtues of pilocarpine could not be utilised in affections of the first stomachs, seeing that the mucous membrane of these is not provided with glands; on the other hand, eserine, the same as pilocarpine, is very dear, so that veratrine seems to be more appropriate to the exigencies of veterinary medicine. By reason of these considerations, and relying on results formerly obtained by Cagny (obstruction of the third stomach), Gsell (tympanitis, obstruction of the third stomach), Harms (acute gastro-intestinal catarrh), M. Queyron has substituted for the old treatments, which only gave discouraging results, subcutaneous injections of veratrine. He uses veratrine in solution in tartaric acid, *quantum sufficit* for dissolving hot, and this does not usually cause any consecutive abscess. Here we have an account of his observations:—

I. Cow.—Flatulency, cessation of rumination since the evening before, following on a large meal of clover. Treatment.—Excitant decoctions and 500 grammes of sulphate of sodium; same condition the next day. Hypodermic injection of 15 centigrammes of veratrine; ten minutes after this, severe agitation; an hour after, voiding of substances from the rumen. There were also several successive vomitings; the substances voided amounted to a bucketful. Complete cure after a few days.

II. Cow put to work as soon as it had finished its meal. Colic and flatulence. Injection of 15 centigrammes of veratrine. Voiding of alimentary substances. Rumination was re-established in the evening.

III. Ox affected with want of appetite, cessation of rumination, without other special symptoms. Excitant decoctions, with the addition of 700 grammes of sulphate of sodium. Same condition the second day after with increased tympanitis. The animal voided no excrements for two days. The rectum contained only mucous matter stained with blood. Injection of

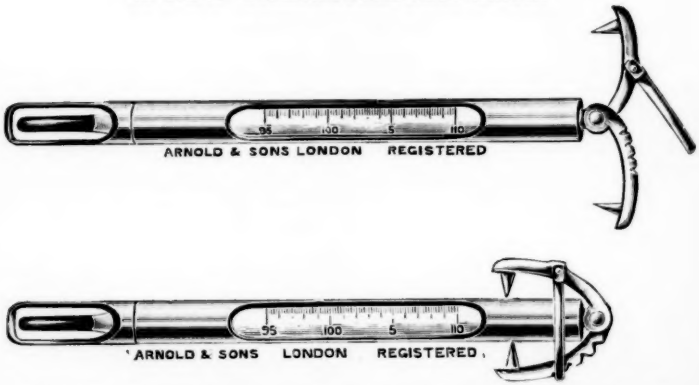
10 centigrammes of veratrine. Effect nil. The injection was repeated the next day without result. Animal slaughtered; an invagination was found in the region of the ileum.

IV. Bull, ten months old, had been treated for four days past for indigestion of the rumen. Tympanitis. No defecation for three days, but mucosities, which were seen next morning in its litter. The author diagnosed an obstruction. Invited to treat the animal in any case, he gave a purgative, the effect of which was nil, then an injection of 10 centigrammes of veratrine, equally inefficacious. Slaughtered; two invaginations in the ileum.

V. Cow showing flatulence, cessation of rumination, dryness of the mouth, fœtid eructations, post-sternal sensitiveness, and constipation. Diagnosis.—Dryness of the third stomach. Diet, excitant decoctions and purgatives. The next day there was no improvement. Black coffee, 1 litre; ipecac., 30 grammes; emetic, 10 grammes. Mustard plasters under the belly. The second day after, same condition. Linseed mashes, injection of 20 centigrammes of veratrine. Vomitings the following night, after which the cow took some hot mashes. The third day, general condition bad. Injection of 30 centigrammes of veratrine and 10 centigrammes of sulphate of strychnine. More vomitings during the night. The fourth day, condition improved; the animal took mashes. The seventh day, defecation of dry substances, in small flat pieces, and coming from the third stomach. The animal took cooked food. Treatment.—Fomentations, injection of 15 centigrammes of veratrine and 10 centigrammes of strychnine. Diarrhœa followed in the days ensuing, bringing with it desiccated substances from the third stomach. Injection of 10 centigrammes of veratrine and a like amount of eserine. The cure was complete a few days later.

VI. Cow attacked with painful colic, with signs of enteritis. Simultaneous injection of 5 centigrammes of veratrine and 5 centigrammes of eserine. Cure.—*Le Progrès Vétérinaire.*

A NEW THERMOMETER CASE.



SIRS,—The diagram represents a Thermometer Case which Messrs. Arnold & Sons made for me last winter, and which I designed to obtain a register

of the maximum temperature in cows testing with tuberculin, without having to personally take the temperatures every three hours.

It is an ordinary thermometer case, with a special clip attached to one end.

The thermometer and case are inserted into the vagina, and the clips encircle the vulva, and fix the case. The case appears to cause little or no inconvenience, either during the time it is fixed or afterwards, and there is less interference with the milk supply than there is when the cows have to be disturbed to get their temperatures. The case is easy and simple to fix, and remains for the needful twenty-four or thirty-six hours. For testing two or three cows in out-of-the-way places it is very useful, and makes the testing easy instead of laborious.—Yours faithfully,

HAROLD SESSIONS.

Correspondence.

To the Editor of THE VETERINARY JOURNAL.

July 5th, 1897.

DEAR SIR,—We have just introduced a new Aseptic Veterinary Hypodermic Case, containing syringe, needles, and a bottle each of tuberculin and mallein.

The syringe has asbestos plugs, and the parts all removable so that barrel and plugs may be readily sterilized.

We believe this is the first aseptic case devised for carrying doses of mallein and tuberculin with the hypodermic syringe complete.

If you can find room to mention it in the columns of THE VETERINARY JOURNAL, we shall be glad.

We are, dear Sir, yours faithfully,

C. J. HEWLETT & SON.

VETERINARY EXAMINATIONS.

To the Editor of THE VETERINARY JOURNAL.

DEAR SIR,—I thank you for publishing my letter in your last issue, and am satisfied to leave the matter to the profession. I sincerely trust, however, you will have the courtesy to refer to the *not* very creditable "past," in another tone to that of your Editorial in the June Number of the Journal, because I dislike any subject being put before us in any but the true light. As to being hostile to yourself, sir, all I can say is, I am sorry you thought so. I am sure your gallantry will not be tested by myself, as I am no man's "for"; I merely try to correct erroneous impressions, and if I have succeeded in doing so on this occasion, it is a small tribute to those gentlemen who worked so faithfully and earnestly for us in "the good old times."

I do not expect to convince you as to eight examiners being more difficult to satisfy than four, but I would suggest that you ask your class which they would prefer to test them—four or eight men on the same subject? Moreover, it is quite as probable that the "prejudices," "fads," or "little failings" of the examiners would be doubled as well as their good qualities.—Yours faithfully,

GEO. A. BANHAM.

RELIANCE TOOTH RASP.—(ARNOLD'S PATENT.)

To the Editor of THE VETERINARY JOURNAL.

July 12th, 1897.

SIR,—In this month's VETERINARY JOURNAL appears a letter from Mr. Huish, and as many members of the profession may be under the impression that the rasp-holder which, he states, was shown at the Birmingham meeting is somewhat similar in construction to the one we have lately introduced, we desire to correct this statement, as no rasp-holder has ever been previously made which opens by means of a joint at the upper end. By this arrangement, without any further fixing than simply closing the clamp or holder, the rasp plate is securely and firmly held in position, and the process of changing one plate to another can be done easily in a few seconds.

The Reliance Tooth Rasp has now been tested by many leading members of the profession, and they one and all acknowledge it to be undoubtedly the most perfect rasp of any yet invented.—We remain, Sir, yours faithfully,

ARNOLD & SONS.

RELIANCE TOOTH RASPS.

To the Editor of THE VETERINARY JOURNAL.

With reference to your footnote to my letter which appears in your July number, may I be allowed to point out that the notice was Editorial, and as such replied to by me. With apologies for again taking up your valuable space.—Yours faithfully,

C. H. HUISH.

Obituary.

Stallard, G. R., Pontypool, Monmouthshire	May, 1895.
Chalmers, J., Longton, Cheshire..	April, 1880.
Eglington, H. S., Sydling, Dorchester	Dec., 1889.
Thomas, J. D., Lampeter	April, 1879.
Morris, Henry, Liverpool	April, 1874.
Garton, Edward, Loughboro', Leicester..	May, 1849.
Legg, Geo., Lower Edmonton	June, 1844.

Communications, Books, Journals, etc., Received.

Second Report on the Departmental Committee appointed by the Board of Agriculture to inquire into the Etiology, Pathology, and Morbid Anatomy of the Diseases classed as Swine Fever; The Lancet; Land and Water; Veterinarian; Veterinary Record; American Veterinary Review; Journal of Comparative Medicine; Australian Farm and Home; Results of Use of Tuberculin, by James Wilson, M.A.; Bacteriological Diagnosis, by St. John Reid; Country Life Illustrated; Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); La Clinica Veterinaria (Milan); Il Nuovo Ercolani (Pisa); La Revista Veterinaria (Buenos Aires); Deutsche Thierärztliche Wochenschrift (Hannover und Karlsruhe); Archivos de Medicina Lisbon: José Bastos).